ENTOMOLOGICAL BUREAU OF ENTOMOLOGY

SIERRA LEONE.

Annual Report

OF THE

LANDS AND FORESTS DEPARTMENT

FOR THE YEAR

1925.

FREETOWN:
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SIERRA LEONE
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FROM THE COMMISSIONER OF LANDS AND FORESTS
TO THE HONOURABLE THE COLONIAL SECRETARY, FREETOWN.

SIR,

I have the honour to submit herewith the annual report of this department for the year 1925.

2. The department now comprises the following divisions:—

(*a*) HEADQUARTERS—ADMINISTRATIVE
(*b*) DIVISION OF RESEARCH
(*c*) DIVISION OF AGRICULTURE
(*d*) DIVISION OF FORESTS
(*e*) PLANTS AND PRODUCE INSPECTION.

3. The staff of the department at the end of the year was as follows:—

HEADQUARTERS—ADMINISTRATIVE.

Head of Department:

Commissioner of Lands and Forests ... ... M. T. Dawe, O.B.E.,

assisted by one head clerk, six clerks and a keeper of economic collection.

DIVISION OF RESEARCH.

Agricultural Chemist	Dr. F. J. Martin
Entomologist	E. Hargreaves
Assistant Agricultural Chemist	H. C. Doyne

and three laboratory assistants

DIVISION OF AGRICULTURE.

Director of Agriculture	D. W. Scotland
Agricultural Instructor	D. C. Edwards
Provincial Superintendent of Agriculture ...	J. W. D. Fisher
" " "	R. R. Glanville
" " "	E. I. Nisbett
" " "	J. V. R. Brown

DIVISION OF FORESTS.

Conservator of Forests	K. G. Burbridge
Senior Assistant Conservator of Forests ...	E. Macdonald
Assistant Conservator	D. G. Thomas
" "	A. Burns
Rangers, First and Second Class	Ten
Foresters, First and Second Class	Eight
Forest Guards	Fifty-four
Nurserymen	Eight

DIVISION OF PLANTS AND PRODUCE INSPECTION.

Inspector of Plants and Produce ... ... G. Tuach

and three sub-inspectors of produce.

HEADQUARTERS—ADMINISTRATIVE.

4. The Commissioner returned to Sierra Leone on the 2nd February, having been at Wembley as Exhibition Commissioner for Sierra Leone at the British Empire Exhibition in 1924 from 2nd March to 17th December. On 19th December he sailed for Madeira and the Canary Islands, studying the fruit industry, more particularly on the islands of Grand Canary, Teneriffe and La Palma.

5. The Commissioner visited Mabang and Njala in March, being absent from Freetown from the 18th to the 25th. The visit to Mabang was made mainly to inspect a site in that region for an oil-palm plantation.

6. The Commissioner also visited Shenge in the Southern Province in April, being absent from headquarters from the 16th April to the 3rd May. While at Shenge he visited the Plaintain Island, the Dema Chiefdom on Sherbro Island and all the Turtle Islands, inhabited and uninhabited. On return to Freetown the Commissioner proceeded on 4th May to meet His Excellency the Governor at Njala and returned to headquarters on the 9th. On the 22nd July a further visit was made to Njala in company with the Honourable Director of Public Works, the Deputy Director of Sanitary Services and the Director of Education, to select a site for the proposed Sierra Leone College of Agriculture and Protectorate Teachers' Training College returning to Freetown on the 24th of the same month.

7. Owing to pressure of office work, due partly to the absence of several senior officers of the staff on leave, the Commissioner was unable to make an extended journey in the Protectorate during the year.

Imperial Institute.

8. During the year the Government continued to consult the Imperial Institute in connexion with various products as in former years, and the following investigations and enquiries were carried out. All the samples referred to were forwarded by the Commissioner of Lands and Forests.

Piassava Fibre.—With a view to improving the quality of Sierra Leone piassava a series of retting experiments was carried out by the Lands and Forests Department in the Colony in order to determine the best method of preparation. In these experiments twelve samples of the leaf bases of both *Raphia vinifera* and *R. Gaertneri* were retted in standing or swamp water and in running or river water for various periods, and the products were forwarded for comparative examination.

The swamp-retted *R. vinifera* samples contained less brittle fibre than the river-retted product, and the swamp-retted *R. Gaertneri* fibre was also better on the whole than the river-retted material, although the difference in this case was very slight. The results, however, did not permit of a definite conclusion with regard to the comparative effect of river-retting and swamp-retting on the quality of the fibre. In most of the bundles the fibre was of uneven thickness, and it was suggested by a firm of piassava importers, who were consulted, that the piassava should be roughly graded in Sierra Leone and the thicker fibre sorted and baled separately for shipment. It was recommended that trial consignments of several tons each of the two species suitably retted, cleaned and graded, should be prepared and forwarded to the Institute for examination and sale. In connexion with the question particulars were furnished, at the request of the Commissioner of Lands and Forests, as to the methods of preparation of piassava in South America.

Cotton.—Two samples of Nanga cotton, which were believed to represent a form of the Quande variety, were of similar appearance to the Quande cotton already examined at the Imperial Institute and also resembled it in strength and length of staple. The yields of lint on ginning were, however, considerably below those obtained previously at the Imperial Institute with Quande cotton. Consignments of similar quality would be readily saleable in the United Kingdom.

Cuttle Fish "Bones."—These cuttle fish bones are found, sometimes in considerable quantities, on the coast of Sierra Leone and it was desired to ascertain their probable value and uses in the United Kingdom. Importers who were consulted stated that bones of the size of these samples would be regarded as low grade material, which could only be used for grinding or for the use of poultry, and would realize a low price. Commercial specimens of cuttle fish bones, representing the material required on the London market, were supplied to Sierra Leone, and it was suggested that if bone of this quality is available in large quantities a trial shipment should be forwarded to the Institute.

Palm Pericarp Waste.—Samples of washed and unwashed pericarp waste were received for examination in connexion with trials in the Colony of a depericarping machine. The result showed that the pericarp still contained a large quantity of oil.

Arrowroot.—This arrowroot was of normal composition, containing a good percentage of starch and satisfactorily low amounts of protein and ash. It was inferior in colour to St. Vincent arrowroot, and this fact would render it difficult to dispose of consignments in competition with the latter. A sample of commercial St. Vincent arrowroot was sent with the report for comparison.

Attention was drawn to the restricted demand for arrowroot in the United Kingdom, and it was pointed out that it was doubtful whether it would be worth while to produce it on a commercial scale in Sierra Leone for export. The Institute offered, however, to investigate the commercial possibilities further on receipt of information as to the price at which the material could be offered.

Ginger.—In connexion with steps taken in Sierra Leone with a view to improving the quality of the ginger produced in the Colony, a memorandum on the uses of various types of ginger in the United Kingdom, embodying information furnished by commercial experts in London, was prepared at the Imperial Institute and forwarded to this department. The suggestion was made in the memorandum that a quantity of peeled ginger should be prepared in Sierra Leone and sent to London to test the market. Tables showing the sources of supply of the ginger imported into the United Kingdom were also furnished.

Cocoa.—Information was furnished as to the loss in weight occurring in the fermenting of cocoa beans, and figures were supplied showing the results obtained in experiments made in the Gold Coast and elsewhere.

Imperial Bureau of Entomology.

10. Many consignments of insects have been furnished to this bureau, collected by the Entomologist, and valuable assistance from the Director has been received in naming many of the species forwarded.

Imperial Bureau of Mycology.

11. Several plant diseases have been referred to this bureau for determination, and valued assistance has been received from the Director and staff in diagnosing the diseases and in advice in regard to treatment.

Kew.

12. A large number of botanical specimens have been collected and forwarded to the Royal Botanic Gardens, Kew, for determination, and a few interesting new species have been found. The department is indebted to the Director and to various members of the Kew staff for valuable assistance given in naming the plants forwarded.

Imperial College of Forestry, Oxford.

13. The Government contributes a grant of £200 per year towards the maintainance of this institution for the training of forestry officers, and during the year Assistant Conservator Mr. D. G. Thomas took a special course at the college while on vacation leave.

The department has supplied a collection of timbers to the college and has forwarded a supply of herbarium material for the study of the students.

Herbarium.

14. During the latter part of 1925 the department was fortunate in securing the services of Miss B. Newton, B.Sc., as honorary botanist to the department. Miss Newton has rendered valuable assistance in the rearrangement of the herbarium, in compiling a revised list of plants found in Sierra Leone, and in the preparation of a map showing the distribution of the different varieties of oil-palms throughout the Protectorate.

Departmental Museum.

15. The arrangement of this museum had to be deferred till the end of the year until the exhibits sent to Wembley were returned. The arrangement is now nearing completion and a catalogue is being prepared, and it is hoped this reference collection of products will be of value to the planters and farmers of the country and to the educational institutions of Freetown and the Protectorate.

DIVISION OF RESEARCH.

16. The report of the Agricultural Chemist forms section I of Part II of this report and that of the Entomologist, section II.

Chemical Section.

17. Section I, which deals with the work undertaken in the chemical laboratory, embodies the most important work of the department for the year. The investigations undertaken comprise a wide variety of subjects, but the principal work has been in connexion with

(*a*) a soil survey of the country

(*b*) oil-palm investigations and

(*c*) piassava retting trials.

Soil Survey.

18. Up to the end of the year 639 soil samples had been collected and a large number examined. For the first time in the history of Sierra Leone we are able to study, in some detail, the nature of the soil. It is found that all the soils so far examined are more or less acid. In the case of the sandy soils, which are slightly more acid than the gravelly ones, the greatest acidity is found in the second foot below the surface, and in the case of the gravelly soils the greatest acidity is found in the top foot of soil, which decreases slightly as the third and fourth foot is reached. The treatment for acid soils is the application of lime. Lime is however very scarce in Sierra Leone. Up to the present limestone rock has not been found in this country, the only available source of lime is at present marine shells. When at the Canary Islands in January, the Commissioner of Lands and Forests made enquiries as to the possibility of obtaining supplies of lime from Las Palmas and obtained samples. The most extensive deposits of limestone in the Canary Islands are found on Fuerteventura and it would seem that the best way to obtain lime in bulk for agricultural purposes in Sierra Leone would be to import the limestone by sailing boat, burning it in local kilns as required.

The Chemist's report gives interesting data as to the variety of soils on which the oil-palm thrives. The site selected for the oil-palm plantation near Mabang contains a variety of soils, and this plantation should afford valuable data as to the yields of the palm on different types of soils.

Oil-palm Investigations.

19. Oil-palm products, kernels and oil, form the backbone of the trade and commerce of Sierra Leone, and the development of the oil-palm industry is receiving foremost attention by the Government. During the year a special report was issued by the department on the Oil-palm Industry in Sierra Leone, setting forth a programme of work for the development and expansion of the industry. That report embodied the investigations which had been, up to that time, carried out in the chemical laboratory. The Chemist's report summarizes those investigations and records the further work which has been accomplished.

The question of the relative productivity of the different varieties of oil-palm is an important one, and is being further investigated in the field, as the yield of pericarp oil and kernels are not the only points to be considered. The size and number of heads borne annually by the different varieties are also factors to be considered in determining the relative productivity of the different types and their respective yields of fruit. In these investigations difficulties occur in finding intermediate types, as indicated in paragraph 58 of the Chemist's report,—doubtless the result of cross fertilization. A survey is in course of progress to determine the distribution of the different varieties throughout the Protectorate. The results so far indicate that by far the commonest variety found is the Kawei: many chiefdoms contain pure stands of this variety.

The investigations made to determine the quality and composition of palm kernels are instructive, and show that not only is the yield from decayed and mouldy kernels less than that from sound kernels, but the oil is of very inferior quality.

It is hoped that the legislation brought into force at the end of the year for the compulsory protection of water-borne kernels will result in diminishing the quantity of soaked kernels and in an improvement in the quality of kernels generally.

Piassava.

20. A good deal of time and attention has been given to retting experiments to determine the species of raphia palm, and the part of the leaf stalk which produces the best fibre and the period of retting which gives the best results. A provisional report on these experiments has been prepared by the Agricultural Chemist and has been circulated for official information. A final report will be prepared when valuations of the samples by trade experts have been received from the Imperial Institute. A brief summary of the results of the investigations is contained in paragraph 63 (section I). It will be noted that Germany is our biggest customer for piassava and that the exports to that country are yearly increasing.

Entomological Section.

21. Section II deals with the work of the Entomologist, who was in the country up to 18th November, when he went on leave. The fact that eight members of the family Derbidae have been found as pests of the oil-palm, six of which are new to science, and that a large number of other insects have been found which are also new to science, indicates that there is a good deal of original work to be done in Sierra Leone and emphasizes the necessity for the full time services of a Government Entomologist.

Coco-nut Scale.

22. The coco-nut scale which caused so much damage to the coco-nut palms during the last two or three years, claimed most of the Entomologist's time. The pest has now been brought under control and the palms are now assuming a normal appearance and producing nuts.

Crop Pests.

23. Numerous crop pests are dealt with in the Entomologist's report, but the crop which probably suffers most from insect enemies is kola, and these pests are now receiving special investigation.

DIVISION OF AGRICULTURE.

24. The report of this division forms part III and this includes as Appendix A meteorological data of various stations in the Colony and Protectorate, and as Appendix B a rainfall statement of the same stations, covering a period of ten years.

Agricultural Instruction.

25. This is dealt with by the Director of Agriculture. On the whole good progress has been made during the year and great credit is due to Mr. Edwards, the Agricultural Instructor, for the advances made under conditions not altogether satisfactory. It has been recognized for some time past that it is essential that agricultural education be placed on a more satisfactory basis. The need is felt for a properly equipped agricultural college where teachers, who are to teach agriculture in the rural schools throughout the Protectorate, should receive a proper training in agriculture and where students who are destined to become district agricultural assistants and instructors under this department should be thoroughly trained.

Agricultural Development.

26. The systematic efforts which were commenced in 1923 to interest the people in the extended cultivation of staple export crops and in the better preparation of produce for the market, have been continued in 1925. Attention has been principally directed to cotton, coco-nuts, swamp rice, cocoa, ginger, castor beans and maize.

Cotton.

27. This is dealt with in the Director of Agriculture's report.

The attempts made in 1924 to establish the cultivation of Allen Long Staple cotton were repeated in 1925, but results were on the whole unsatisfactory. In 1924 the seed was sown too early and the crop became damaged in the rains. In 1925 the sowing was done much later, but unfortunately the rains continued much later than is usual and the crops were damaged by the later rains. Better results were obtained in the Kissi, Pendembu and Konno districts than in the Northern Province. The attempt to get the natives to grow cotton has not been successful, and we must wait until we have, at the experimental stations, proved the suitability of another variety or have evolved a variety adapted to local climatic and soil conditions.

28. The account of the cotton trials conducted at Njala, gives interesting data and indicate that the acidity of Sierra Leone soil is too high for cotton, since the production was increased 50 per cent. by liming, and in four cases was not appreciably further increased by the addition to liming of an application of ammonium sulphate and in one case actually decreased.

29. The position in regard to the cotton experiment stations started at Kabinkola and Malaforea in the Northern Province, and Kainkordu, Bedu and Jaima in the Central Province is set forth in paragraphs 58 to 62.

Coco-nuts.

30. The encouragement by the Government of coco-nut planting in the littoral belt of the Southern Province has been continued. The Government purchases seed nuts and issues them free to the growers and provides an instructor to see them properly planted in nurseries and

subsequently in plantations in suitable areas. The Director of Agriculture's report gives particulars of the progress made during the year, the number of seed nuts sown were 35,836, and 18,152 young palms were set out in 142 plantations. The Commissioner of Lands and Forests visited all the Turtle Islands in April and was impressed with the possibility of extending the coco-nut planting scheme to these islands.

Cocoa.

31. The planting of cocoa in the Southern Province has been steadily carried on during the year, and a new area is being brought under cocoa in the Northern Province and its cultivation is being encouraged in suitable areas of the Central Province.

This crop is dealt with by the Director of Agriculture in his report. The export of cocoa during 1925 was fifty-five tons, an increase of thirty-five tons over the export of 1924. It is hoped that the export for 1926 will treble that of 1925.

Swamp Rice.

32. The project of encouraging the cultivation of rice, on what were hitherto regarded as waste lands on the riverine areas in the Southern Province, has been continued and very considerable progress has been made during the year. The cultivation of inland swamps to rice has also been encouraged in the interior parts of the Protectorate, particularly in the Pendembu District, with very satisfactory results.

Ginger.

33. The exports of ginger for this year amounted to 49,260 cwts. valued at £119,742, as compared with 38,847 cwts. valued at £105,633, an increase of 10,413 cwts. in quantity and £14,109 in value. In 1923 and 1924 the bulk of the ginger crop was shipped to the United States of America, but in 1925 the United Kingdom took 24,920 cwts. Efforts were made to encourage the better preparation of the root for the market, but as advice was not backed by legislation, the improvement desired was not maintained. This is unfortunate, as will be gathered from the following excerpt from "The Spice Mill" of January, 1925, a spice journal published in New York, which reads as follows :—

> "Did you notice the improvement in African ginger ?
> Unheralded, it came like a thing apart—its friends scarcely recognized it. Instead of dingy, sombre, sodden root, it was bright in color, clean and cured right."
>
> "Obeisance to the Sierra Leone uplifters who wrought this betterment. And they say the 1924 standard is permanent."

Attention is directed to the paragraph under 142 (Part III), referring to manurial experiments conducted with ginger. It will be seen that the actual liming of the soil has increased the yield 44 per cent., and that in one case manuring the soil has nearly doubled the production, while in all cases of manuring a considerable increase in production has resulted.

Castor Beans.

34. The Director of Agriculture's report indicates what is being done to encourage the cultivation of castor beans in the Protectorate.

Maize.

35. Reference is made to the results of the importation of South African varieties in paragraph 126 (Part III).

NJALA EXPERIMENTAL FARM.

36. Considerable improvement has been effected in the management of Njala since a European Superintendent of Agriculture has been appointed in charge.

New plantations have been laid down to the Canary banana, Lacatan banana, South African oranges, gorli, oil-palms, plantains, and tea. Useful data is being obtained from the Nigerian oil-palm plantation.

The lime plantations gave a considerable falling off in yield, which is probably due to a heavy pruning of the trees.

The results of liming and manuring cotton and ginger have been already referred to. The results of manurial experiments with rice and ground-nuts are not so marked as in the case of cotton and ginger; although the ground-nuts showed an increase in production from liming, they do not do so in manuring except in the case of super-phosphate.

Agricultural Show.

37. The visit of His Royal Highness the Prince of Wales to Sierra Leone was the great historical event of the year, and the opening of the Agricultural Show by His Royal Highness on the 6th April a red-letter day for Sierra Leone and Freetown.

The Director of Agriculture has given particulars of the Show in his report, and I would only record that thanks are also due to Mr. J. C. Newton, M.B.E., for his kindly help in organizing a concert to raise money for the prize fund and to the artists who took part in that concert. As a result of this concert the prize fund was augumented by the magnificent sum of £138 2*s.* 6*d.* A list of the subscribers and a financial statement has been already published in the *Sierra Leone Royal Gazette*. This Show was undoubtedly the largest agricultural show ever held in Freetown, and there was a very wide range of excellent exhibits, although in some of the Protectorate shows the number of exhibits in many classes have been very much larger.

DIVISION OF FORESTS.

38. The report of the Division of Forests forms Part IV. Owing to the fact that the Conservator of Forests was acting at Wembley as Exhibition Commissioner for Sierra Leone almost throughout the year, and that the Assistant Conservators, when not acting for the Conservator, were in most cases also on leave, little or no reservation work was accomplished. Reserves which were demarcated in 1923 and 1924, but not legally constituted till 1925, amount in all to 296·19 square miles, which brings up the total area of reserves to 547·04 square miles.

39. The Assistant Conservator of the Eastern Circle supplied the Railway Department with 1,389·24 cubic feet of hardwood timber from the Kambui Reserve, but the extraction had to be discontinued when he went on leave.

DIVISION OF INSPECTION.

40. The report of this divison forms Part V. Palm kernels were the only produce to come under inspection during the year, but legislation was passed at the end of the year which will bring palm oil, piassava and ginger under inspection early in 1926, and also tighten up the regulations applying to palm kernels, raising the standard of quality.

Prosecutions.

41. There were more prosecutions in 1925 for offences against the Produce Ordinance than in the previous year, there being in 1924 thirty-six convictions and in 1925 sixty. The total fines imposed last year amounted to £107 2*s.* 6*d.* and this year £191 7*s.* 6*d.*

Revenue and Expenditure.

42. A statement is given in the Inspector's report from which it will be seen there is an excess in revenue over the division's expenditure of over £400.

Export of Kernels and Oil.

43. Another record has been made in the export of kernels, 63,231 tons being exported, an increase over 1924 of 2,114 tons. The quality also has been maintained, and few complaints have been received, except in the case of a few shipments from Sherbro, where the kernels appear to have become impaired by long storage. There has been a decrease in the quantity of palm oil exported (122 tons), but an increase in value of £991. Most of the palm oil was shipped to the United Kingdom—98·8 per cent. of the total quantity exported.

FINANCIAL.

44. A statement of revenue and expenditure for the department for the year is attached.

45. In conclusion, the Commissioner desires to express his grateful thanks to the officers of the department, European and African, who have afforded their willing and valued assistance throughout the year, and also to the political officers for their unstinted help in the various planting projects being carried out in the provinces and districts.

I have the honour to be,

Sir,

Your most obedient servant,

M. T. DAWE,

Commissioner of Lands and Forests.

Lands and Forests Department,

Freetown,

10th May, 1926.

FINANCIAL.

The following is a statement of revenue and expenditure for the department for the year :—

REVENUE.

	Headquarters.	Inspection.	Agriculture.	Forests.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
LICENCES :					
Crown lands	...	...	...	94 8 0	94 8 0
Produce	...	1,418 19 4	...	...	1,418 19 4
Fines for contravention of Produce Ordinance	...	191 7 6	...	...	191 7 6
Fines for contravention of Weights and Measures Ordinance	...	52 0 0	...	...	52 0 0
Departmental fines	1 0 0	1 9 0	4 7 6	5 11 6	12 8 0
FEES OF COURT, ETC. :					
Sale of Government stores	...	...	1 4 4	0 8 6	1 12 10
Sale of produce	...	...	217 3 5	...	217 3 5
MISCELLANEOUS RECEIPTS :					
Other miscellaneous receipts (Royalties—Colonial Reserve)	...	...	...	19 12 0	19 12 0
TOTAL REVENUE	1 0 0	1,663 15 10	222 15 3	120 0 0	2,007 11 1

EXPENDITURE.

	Headquarters.	Research.	Inspection.	Agriculture.	Forests.	Total.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
PERSONAL EMOLUMENTS :						
Salaries	2,225 9 0	1,223 7 2	614 0 0	4,904 10 0	2,632 17 7	11,600 3 9
Duty allowance	240 0 0	...	...	171 10 2	165 0 0	576 10 2
Seniority pay	...	72 0 0	...	...	18 0 0	90 0 0
African assistants	...	...	...	...	2,350 6 7	2,350 6 7
Allowance in lieu of quarters	...	4 6 8	6 0 0	76 1 1	0 15 0	87 2 9
Allowance to motor driver	...	...	...	15 0 0	...	15 0 0
TOTAL PERSONAL EMOLUMENTS ...	2,465 9 0	1,299 13 10	620 0 0	5,167 1 3	5,166 19 2	14,719 3 3

EXPENDITURE *continued.*

	Headquarters.			Research.			Inspection.			Agriculture.			Forests.			Total.		
	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*	£	*s.*	*d.*
Total Personal Emoluments—*brought forward* ...	2,465	9	0	1,299	13	10	620	0	0	5,167	1	3	5,166	19	2	14,719	3	3
OTHER CHARGES :																		
Contingencies	42	16	7	68	2	11	...			47	15	10	31	11	2	190	6	6
Telephone service	30	13	9	...			...			...			...			30	13	9
Transport, travelling allowances, etc.	274	14	3	436	18	3	304	12	6	2,159	8	5	948	6	6	4,123	19	11
Transport allowances	79	13	3	106	6	9	...			...			...			186	0	0
Chemicals and apparatus	...			650	2	10	...			...			...			650	2	10
Agricultural development	...			...			...			300	8	2	...			300	8	2
Agricultural shows	...			...			...			1,496	18	8	...			1,496	18	8
Labour and native assistants	...			...			...			3,027	18	0	561	2	6	3,589	0	6
Tools, appliances and materials	...			...			...			107	19	3	73	4	9	181	4	0
Uniform for African subordinate staff	32	0	11	...			...			...			180	8	6	212	9	5
Grant to Imperial Bureau of Mycology	125	0	0	...			...			...			...			125	0	0
Museum outfit	75	18	10	...			...			...			...			75	18	10
Contribution to Central Forestry, etc.	170	8	8	...			...			...			...			170	8	8
Imperial Institute, contribution to	650	0	0	...			...			...			...			650	0	0
Collecting specimens for Imperial Institute	3	12	5	...			...			...			...			3	12	5
Handbook of Flora of West Africa, etc.	81	9	2	...			...			...			...			81	9	2
Conveyance allowance	...			...			...			...			67	10	2	67	10	2
Library	...			192	14	5	...			107	2	4	15	4	8	315	1	5
Rent of office buildings	245	10	0	...			...			...			...			245	10	0
Rent of Experimental Station, Njala, etc.	...			...			...			9	15	0	...			9	15	0
Electric light and gas plant, etc.	...			187	7	2	...			...			...			187	7	2
Upkeep of lawns around Law Courts	8	18	1	...			...			...			...			8	18	1
Seeds and plants	...			...			...			209	7	8	...			209	7	8
Seeds and seedlings	...			...			...			...			2	10	1	2	10	1
Laboratory appliances	...			...			...			52	8	3	...			52	8	3
Cotton Ginnery, expenses in connexion with	...			...			...			163	7	8	...			163	7	8
Agricultural Scholarship Fund	...			...			...			250	0	0	...			250	0	0
Surveying instruments	...			...			...			...			109	15	10	109	15	10
Outfit allowance	...			60	0	0	...			60	0	0	60	0	0	180	0	0
Tents	...			...			...			...			118	6	0	118	6	0
TOTAL OTHER CHARGES	£1,820	15	11	£1,701	12	4	£304	12	6	£7,992	9	3	£2,168	0	2	£13,987	10	2
TOTAL LANDS AND FORESTS DEPARTMENT ...	£4,286	4	11	£3,001	6	2	£924	12	6	£13,159	10	6	£7,334	19	4	£28,706	13	5

PART II.

Section I.

REPORT OF THE DIVISION OF RESEARCH.

I have the honour to forward herewith my report for the year 1925.

46. During the latter part of 1925, the Lands and Forests Department was fortunate in securing the voluntary services of Miss B. Newton, B.Sc., who has done much useful work for the department.

The departmental museum has been placed in the charge of the Division of Research. Other Colonies have been circularized and asked to supply samples of their most important types of produce and these will be exhibited side by side with local produce in order that a comparison can be made. A large number of exhibits has already been collected and arranged, and it is hoped that the museum will now be visited by local producers, who will have the opportunity of seeing properly prepared produce and also that it will be used for educational purposes by the schools of Freetown.

Laboratory Equipment and Library.

47. The laboratory is now completely fitted up. The petrol gas plant was working early in the year, but owing to various causes it was August before the electric light plant was in going order. The laboratory is now fitted with up-to-date apparatus for dealing with investigations of an agricultural chemical nature. A library has been added to the division and its value for reference purposes is incalculable; it is an asset not only to the Division of Research but to the Department of Lands and Forests.

48. Of the many problems requiring investigations those dealing with soil, oil-palms and piassava have been given priority, and the greater part of the work in the laboratory this year has been devoted to these subjects.

49. The following is a summary of samples received during 1925 :—

Soils.—Northern Province	96		
Central Province	362		
Southern Province	135		
Colony	46	...	639[1]
Oil-palm Products	43	...	43
Piassava[2]		...	8
Oil Seeds and Oils		...	8
Waters		...	8
Grasses		...	8
Limes (Mineral)		...	4
Miscellaneous		...	8
			726

1 Includes 118 collected during the last two months of 1924.
2 Does not include about 100 samples retted in the laboratory.

Soils.

50. The soil survey, referred to in my annual report for 1924, is now being carried out, and up to the end of the year 639 samples had been collected, more than half of which came from the Central Province. Examination of these soils shows a wide range of characters, but two main types of soils predominate, one a red laterite soil varying largely in composition, but always possessing a fairly high proportion of stones and gravel, and the other a sandy loam which also varies considerably, but always contains a high proportion of coarse sand. Clay soils are occasionally met as are also swamp soils containing humus; these latter soils, apart from their humus content, are of a light character and are generally similar to the lateritic or sandy soils previously referred to as the main types of the country.

51. As a very large number of soils have been analysed, a separate detailed report is being printed.

52. It was found that the soils of Sierra Leone, so far as they have yet been examined, are in the main of a light coarse nature, and this is more noticeably so with the sandy soils. Where laterite gravels occur it is sometimes found that after the stones and gravel have been removed, the resulting "fine earth" is of a heavier texture than might be expected. Samples 653–656 from Segbwema, Kennema District, Central Province, are a typical example. Such lateritic gravels, although containing as much as 40 to 50 per cent. of stones and gravel,

can be cultivated with good results. In other cases, lateritic gravel soils occur in which, after removing the "stones and gravel," the "fine earth" remaining is of a coarse nature. These soils are of a very poor type and unlikely to be very productive; the lateritic gravel soil received from Massumbu, Bombali District, Northern Province, is of this type. The sandy soils do not appear to be as common as the gravel soils, and vary from coarse sandy soils to sandy loams and even loams. The coarse sandy soils contain a high proportion of the fraction known as "coarse sand," which is almost pure silica and this, although allowing for easy drainage, does not provide much plant nutriment; the Bedu sandy soils are of this nature. The finer sandy soils, sandy loams and loams, are likely to prove much more productive than the coarse sands, but unfortunately are less widely distributed; soils of this character may be found at King Tom.

Soils Suitable for Oil-palms.

53. Oil-palms are the "Consols" of Sierra Leone, kernels are our most important source of revenue, and it is therefore very desirable that we should find out something about the conditions under which the oil-palm grows before commencing any development schemes. An examination of soils which are at present bearing good stands of oil-palms was therefore made. Each officer in the department was instructed to send in samples of soils taken from areas on which palms were growing thickly and well. The samples were taken from each foot to a depth of four feet and a description of the surrounding country forwarded with the samples. From these descriptions it appears that oil-palms grow well (*a*) on swampy soils (water was found at 9 inches depth in one case), (*b*) on level and undulating ground, and (*c*) on steeply rising ground. The adaptability of the oil-palm to its surroundings is therefore obvious.

54. An analysis of the soil shows that the oil-palm flourishes on both sandy and gravelly soils.

A great variation is shown in the soil on which the oil-palm flourishes, and there is little doubt that the oil-palm will grow in nearly any kind of soil in Sierra Leone. What is more important is the yield that may be expected from oil-palms grown on the different types of soil. Little information is to hand, but what there is indicates that heavier yields are to be expected on the heavier types of soil, and that although the trees flourishes on slopes and hill sides, the best yields are obtained from low-lying areas.

Mangrove Swamp Soil.

55. Only one examination has been made of mangrove swamp soils and this was from a swamp near Aberdeen, which is daily inundated with sea-water.

The top foot of soil was light in colour and did not contain much organic matter, but the second foot was dark in colour and obviously contained much organic matter. The analysis showed that the amount of organic matter increased with depth, as also did the acidity and lime requirement.

Oil-palms.

56. During 1925 a memorandum of the "Oil-palm Industry in Sierra Leone" was prepared by the Commissioner of Lands and Forests, which included as appendix "F" Notes on Oil-palms in Sierra Leone by the Agricultural Chemist. This embodied the results obtained by investigations in the laboratory on the oil and kernel content of the different varieties, on tests with cracking and depericarping machines, results obtained elsewhere by the cultivation of oil-palm stands, an outline of a scheme for an oil-palm plantation, and calculations showing the value of the oil-palm products, which might be expected from the variety known as Henoi, assuming a yield such as that obtained by plantations in Sumatra. The following is a summary of the notes referred to above :—

(1) Five varieties of oil-palms have been distinguished in Sierra Leone and their names and yields of pericarp and kernels are as follows :—

Varieties of Oil-palms (Elaeis Guineensis.)

Variety.	Local Name (Mende).	Pericarp.	Kernels.
		Per cent.	Per cent.
Communis Chev. f. dura Becc. (the hard shelled nut)	Kawei	20	15·6
Communis f. tenera (soft or thin shelled nut) ...	Henoi	47	16·5
Gracilinux, Chev. (shell-less or soft shelled) ...	Togboi	74	Negligible
Communis f. dura Becc. (hard shelled) ...	Jiakeye	22	21
Not yet identified	Kpolei	58	13

(2) The Culley's hand depericarper was examined and not considered very suitable in its present condition.

(3) The Culley's hand oil press was found easy to operate and efficient in extracting oil from the pericarp after the latter has been separated from the nuts by the depericarper.

(4) The Culley's nut cracking machine was tested and found to be fairly efficient.

Greatly increased yields were obtained at Peki Blengo (Gold Coast) by cultivating wild palm stands.

57. All the examinations in the Table on page 11 were conducted on samples obtained from the Central Province, and chiefly from the Kennema District, but samples from other parts of Sierra Leone do not differ very much from those given above. There have, however, been several samples of oil-palms received which are intermediate between Kawei and Henoi and these either a cross or a different variety. There is no very apparent difference between this variety and Kawei, except that the pericarp is a little thicker and the shell a little thinner than the pure Kawei obtained from the Kennema District. The shell is still thick enough for it to be classed as "hard-shelled," and the natives do not distinguish between this variety (or cross) and Kawei.

Below are given the results of examinations of two samples of Henoi and four samples of this intermediate type.

Sample Nos.	Variety.	Origin.	Amount Pericarp per cent.	
532	Henoi	Kennema	46·6	
596	,,	Makump	45·3	
572	Similar to Kawei	Gbangbama	26·8	Average 27·5 per cent.
573	,,	,,	30·7	
527	,,	Makump	28·6	
839	,,	,,	26·5	

The Henoi from Makump is similar to the Henoi from Kennema, but the variety similar to Kawei has an average of 27·5 per cent. of pericarp as compared with 20 per cent. for the Kawei previously examined. A survey of the distribution of the oil-palm and its different varieties is being carried out by the officers of the department and information as to the extent of the different types will, in due course, become available.

Nigerian Oil-palms in Sierra Leone.

58. In 1919 fruits of the thin-shelled Nigerian oil-palm were obtained from Nigeria and planted at Njala. These did not breed true to type, but produced both thin-shelled and thick-shelled fruit.

The following table of analyses of samples from these palms shows that two, if not three, types are present :—

Sample Nos.	Pericarp per cent.	Shell.	Pericarp Oil per cent.	Kernels per cent.
470	75·8	Thin	34·9	8·5
468	50·6	Thick	23·4	7·1
471	51·5	,,	23·7	6·3
466	42·6	,,	19·6	12·0
467	42·8	,,	21·5	11·7
469	46·8	,,	21·5	12·2

Palm Kernels.

59. Palm kernels form the bulk of the exports from Sierra Leone and a number of examinations have been made to determine the average composition of kernels as exported from Freetown. In July, samples were taken from all the important stores in Freetown and the proportions of shell, decayed kernels and kernels apparently sound but with mouldy interiors, were determined. The average shell content was 2·9 per cent. while the decayed kernels reached 2·1 per cent. The remaining 95 per cent. of kernels were apparently sound, but on being split open, a certain proportion of them was found to be infected with mould. The mould was in some cases only just visible, while in others it had spread through the interior of the kernels. From 1 to 8 per cent. of the kernels were more or less affected, while in a very bad case 28 per cent. were mouldy. The sample showing the highest percentage of mouldy kernels also contained the highest proportion of decayed kernels.

60. The presence of decayed and mouldy kernels detracts from the value of a consignment, as will be readily seen from the results given below obtained from the analysis of sound, mouldy and decayed kernels from the same source. The sample examined was of "soaked" kernels, which were obtained from the Southern Province. As a result of soaking, the kernels had deteriorated in quality, some being obviously decayed while some, although apparently sound, had mouldy interiors.

The oil content of the kernels was first estimated :

Good sound kernels	52·7 per cent. oil
Kernels with mouldy interiors	46·1 „ „
Decayed kernels	45·3 „ „

The free fatty acids of the oils from these sources were then determined :

Oil from sound kernels	2·2 per cent. F.F.A.
Oil from kernels with mouldy interiors	14·5 „ „
Oil from decayed kernels	14·3 „ „

The deterioration, due to decayed and mouldy kernels, is therefore obvious; not only is the yield of oil less, but it is of an inferior quality.

Piassava.

61. Some eight samples of piassava were submitted for examination and, in addition to this, investigations were carried on in the laboratory in order to determine certain points relating to the preparation of this fibre. A native experienced in piassava cleaning was engaged to assist in cleaning the fibre. About 100 samples of fibre were prepared, forty-three of which were sent to the Imperial Institute for valuation. A special bulletin is being prepared on this subject in which the report of the Imperial Institute will be incorporated.

62. The results obtained from the investigations may be briefly summarized :—

(1) Piassava is obtained from the two palms *raphia vinifera* (Nduvui) and *raphia gaertneri* (Kale).

(2) An examination has been made of the fibres of these two palms and samples transmitted to England for valuation by trade experts.

(3) The fibre varies in quality from different parts of the stalks, that from the sides and back being better than that from the centre of the stalk.

(4) The fibre is often of better quality at the base of the leaf stalk while that from the upper half of the stalk is often very straw-like : this is more noticeable in young leaves

(5) Piassava rets most quickly when the stem is split longtitudinally and in that state requires three to six months for complete retting.

(6) An examination of commercially prepared piassava from two different localities (Mocharch and Mopalma) suggested that the difference in quality was due more to the method of preparation than a difference in the variety of palms.

(7) An examination of the export figures shows that Germany is our biggest customer and that our exports of piassava to that country are increasing.

Grasses.

63. In view of the importance attached to the mineral content of grasses and the report of the sub-committee recently appointed in England to deal with the question of the mineral content of natural pastures, an examination of the mineral constituents of native grasses has been made, and the analysis of efwatakala grass, a recently introduced species, also included.

64. The grasses were collected from lateritic soil in the vicinity of Freetown and samples sent to Kew for identification.

In the table below, only the local names are given, as the identifications from Kew have not yet been received. The results of the analysis were as follows :—

Analysis of Ash of various Grasses.

Sample Nos.	Local Name of Grass.	Per cent. Ash on Dry Material.	Composition of Ash.		
			Per cent. P_2O_5	Per cent. CaO	Per cent. K_2O.
685	Enehple	3·7	2·91	9·78	—
686	Ngalei	6·4	4·16	5·19	9·05
687	Bau Bau	5·1	3·08	7·56	13·38
688	Foni	4·0	2·26	7·92	3·01
689	Ngongo	6·0	2·72	4·66	17·84
684	Lalang (*a*)	4·5	6·72	10·41	11·26
818	Atanki	3·0	3·09	11·07	7·28
819	Efwatakala	5·1	2·01	7·22	5·35

(*a*) From old graveyard.

Lime.

65. The soils of Sierra Leone are for the most part deficient in lime, and as no limestone deposits have yet been discovered in Sierra Leone, other sources of lime were sought. The nearest sources of lime yet discovered are in the Canary Islands and samples of lime were obtained from Grand Canary and Fuerteventura for analysis. At the same time the possibility of utilizing marine shells as a local source of lime was considered. The following table gives the results obtained by analysing limes from these three sources :—

Analysis of Lime.

Sample Nos.	477	478	519
Origin.	Fuerteventura Per cent.	Grand Canary Per cent.	Local (Burnt marine shells) Per cent.
Carbonate (as $CaCO_3$) ...	28·8	22·2	82·0
Hydrated lime ($Ca(OH)_2$)	64·0	66·1	8·7
Magnesium (as MgO) ...	4·5	6·6	small—not estimated.

Both samples of Canary lime were in a fine state of division and suitable for either building or agricultural purposes. The Sierra Leone lime, which was made locally by burning oyster shells, was very badly burnt, and owing to this, in a very coarse state. Much of it was in the form of carbonate and therefore would have been unsuitable for building purposes. Even when badly burnt it could be used for lining land, although it would be much more suitable and more immediately efficacious if properly burnt.

The Effect of Lime on Soil.

66. An interesting experiment, showing the effect lime may have on certain soils, was carried out at Njala. Land bearing high bush was cleared and divided into plots, which were then treated in the following manner :—

(*a*) Lime applied at the rate of 2 tons per acre.

(*b*) No lime applied.

Cotton was sown on these plots and the yields of the limed and unlimed plots, are given in the table below :—

	pH.	Lime Requirement.	Yield : (lb. per acre).
Control plots—untreated	4·4	·41	251
Plots receiving lime	5·4	·25	352

The marked increase in yield of cotton on the limed plots is very significant, while the beneficial effect of this form of treatment is equally well shown by the pH values and lime requirement figures.

Water.

67. An examination of the Freetown water supply was made. The Freetown water was analysed in connexion with an enquiry through the American Consul at Dakar by an American firm, who contemplated improving the water for boiler purposes. The results of the examination show that the water is very pure and that it needs no treatment to make it suitable for boiler purposes. The Chief Mechanical Engineer of the Railway Department confirmed this from his practical experience in Sierra Leone. The results of the examination are as follows :—

Analysis of Freetown Water Supply.

Total solids in solution	15 parts per million
Dissolved organic matter	4 „ „ „
Dissolved inorganic matter	11 „ „ „
Chlorides (as Cl)	2·3 „ „ „
Sulphates (as SO_3)	0·4 „ „ „
Carbonates (as CO_2)	1·8 „ „ „
Calcium (as CaO)	3·4 „ „ „
Magnesium	Nil
Iron	Nil

I have the honour to be,

Sir,

Your obedient servant,

F. J. MARTIN,

Agricultural Chemist.

22nd April, 1926.

Section II.

REPORT ON THE ENTOMOLOGICAL SECTION.

68. During the year 1925 most of the time of the Entomologist was taken up by work on the coco-nut scale, as it was desired that the study of the treatment of this pest should be completed, if possible.

69. Some time was spent on the tsetse fly survey, also on kola, cotton, and other crops.

70. In connexion with crops, the pests attacking kola would appear to require most urgent attention, kola being the second most important export from this country.

71. A large number of specimens, including many new to science, have been forwarded to the Imperial Bureau of Entomology for identification. A few were also submitted to the Imperial Bureau of Mycology.

The more important pests are arranged under the respective crops.

Banana.

The weevil found attacking this plant is the banana weevil, *Cosmopolites sordidus*.

Citrus.

72. Two additional pests were in evidence, seriously affecting lime and orange, also grape fruit to some extent. *Papilio demodocus* is a brilliantly coloured butterfly of the swallow-tailed family, and the larvæ devour the leaves, often resulting in complete defoliation. It is especially serious in nurseries. This species affects citrus in other countries.

Cereyonia citri is one of the flea-beetles, the immature stages of which are spent inside the shoots. The larva consumes the inner tissues and thus kills the distal portion of the twigs. In some cases, all the growing branches were affected.

Cacao.

73. The only insect attracting notice is the borer *Engyophlebus obesus*. The larva of this moth tunnels inside the branches, and affected parts are easily observed by the drooping and later browning of the leaves.

This is a common pest of cacao in other parts of West Africa.

Coco-nut.

74. The coco-nut scale *Aspidiotus destructor* has invaded new districts, but where the natural enemies are present, the pest has gradually diminished.

Distribution of the Red Fungus, *Nectria diploa*.

75. The distribution of the red fungus (*Nectria diploa*) has been continued, and material has been applied to many palms in Freetown, Waterloo, York, Kent and other places in the Colony, also at Shenge and other towns in the Southern Province, and many places in the Port Lokko District of the Northern Province.

Most of this work was carried out towards the end of the rains, so that the fungus has not yet had time to show the full effect. It has certainly commenced activity, and attacked the scales on palms and other plants in the vicinity.

There has been a general improvement in the appearance of the coco-nut palms and it is considered very probable that the pest will give little trouble in the future.

The results justify the distribution the fungus wherever the scale on the coco-nut occurs. In addition, it is able to live on and destroy other important species of scale insect, occurring on citrus and other plants.

Treatment of Seed.

76. As noted in the previous report, no fungus has been found on the scales attacking the fruit. Since the pest is easily spread without its natural enemies by transport of seed, treatment before transport or planting was advocated, and an experimental nursery was set out at Shenge to determine what treatment would kill the scale without detriment to the germinating quality of the seed.

The following substances were used :—

Kerosene emulsion,
Pure kerosene,
Kerosene and palm oil, equal parts,
Kerosene and palm oil, one part to three.

Twenty nuts were used for each, and after immersion were planted in the usual manner. Forty untreated seeds were used as controls.

Final observations have not yet been made, but it may be stated that pure kerosene has no ill effect. This is simple to use, and does not involve preparation, as in the case of the emulsion.

Application of Artificial Manures.

77. Palms with low vitality are more readily attacked and affected by the scale.

It has been stated, that if activity is increased by the application of artificial manures the plant is able to withstand attack by the scale.

This was therefore given a trial, and forty-six coconut palms of various ages were treated in and near Shenge during August, four pounds of manure being applied to the largest trees and varying amounts to the others.

Spraying.

78. Early in the year a large nursery in Shenge was found to be attacked, and numerous plants were seriously affected.

The whole were sprayed with kerosene emulsion during May. There was a marked improvement in July, while in September, the District Commissioner at Sembehun stated that most of the seedlings were strong and healthy, and few scales remained.

Cotton.

79. Conditions were practically the same as last year, except that many plants were badly attacked by a leaf miner, the larva of a moth, *acrocercops bifasciata*.

Ginger.

80. This has only been found attacked by insects while in store where, under favourable conditions, whole consignments may quickly be rendered valueless owing to the inner portion of the rhizomes having been eaten by beetles. As a rule, there is little evidence of damage on the outside, but on breaking, they are found to be honeycombed, the interior consisting of frass. This is referred to as "wormy ginger."

Lasioderma serricorne and *araecerus fasciculatus* are the most observed.

Kola.

81. At a conference of kola merchants in Freetown, it was stated that the nuts were occasionally "wormy," and it was decided to see to what extent this was the case. Accordingly, some of the merchants were interviewed, and baskets of kola examined.

It proved to be a most serious matter, as the worm was responsible for the loss of over 50 per cent. of the total picked by the grower.

The main insect responsible is the weevil, *Balanogastris kolae*.

The weevil mentioned in the report for last year was later identified as *Paremydica insperata*, but no further instances of its ravages have been recorded.

Another serious pest, widely distributed, is the Psyllid, *Udamostigma tessmanni*. It is found that the severity of its attack is dependent upon the variety of kola.

This insect seriously affects nursery plants, and some spraying with kerosene emulsion has been carried out ; but further work is necessary.

A leaf-sewer, *Sylepta semifugens*, is serious in some districts.

As a result of publicity, many trees in the Colony have been cleared of the parasitic epiphyte (*Loranthus sp.*).

Oil-palm.

82. *Pests.*—The following eight species of the family *Derbidæ* have been collected, and the majority restricts themselves to, or show preference for, the oil-palm as a food plant :—

Camma luteus
Camma dilatata
Diostrombus nitidus
Kamendaka albomaculata
Lydda annetti
Lydda cocos
Lydda hargreavesi
Lydda lineatipes.

Six of these are new to science. Some of these species are numerous, and are potential pests in that being sucking insects, apart from the injury due to loss of sap, with the consequent lowering of vitality of the plant and its effect on the yield of the fruit, there is the risk of introduction of fungoid diseases.

As the result of charring due to bush burning, and other injuries, various beetles are attracted, one of which is a large weevil, *Rhina afzelii*, which tunnels inside the trunk.

No serious damage due to the Hispid beetle, *Coelaenomenodera elaeidis*, has been observed.

General Defoliator, *Zonocerus Variegatus*.

83. This locust has been prevalent, as usual, feeding on most kinds of crops.

Coco-nut and other palms and citrus at Njala were rapidly being defoliated, but an application of Paris Green checked this.

Stored Products.

84. The following insects have been found in stored materials, as ginger, palm kernels, rice, maize, coffee beans, and various seeds, rendering them useless for planting and other purposes :—

Araecerus fasciculatus
Calandra oryzae
Lasioderma serricorne
Sylvanus surinamensis
Tenebroides mauritanicus
Sitotroga cerealella

85. *Tsetse fly.*—The survey was continued in the Moyamba (Central Province) area.

Specimens.

86. Many specimens have been received for identification and advice for treatment, from agricultural and political officers, and it is hoped that these will increase.

In some cases, the insects were immature, and owing to pressure of work necessitating trekking, it was unfortunately impossible to breed them out for identification.

A case of butterflies was arranged for the British Empire Exhibition at Wembley.

One demonstration case of economic insects (injurious and beneficial) was prepared for the departmental museum in Freetown.

Similar boxes are to be supplied to agricultural and political officers as opportunity permits.

Acknowledgments.

87. The department is much indebted to the Director and staff of the Imperial Bureau of Entomology, who undertook the determination of insects and rendered other valuable assistance.

Thanks are also due to the Director and staff of the Imperial Bureau of Mycology, who kindly identified material and advised upon various matters.

E. HARGREAVES,
Entomologist.

30th April, 1926.

PART III.

REPORT ON THE DIVISION OF AGRICULTURE.

I—ADMINISTRATION.

88. The headquarters of the Division of Agriculture is at Njala, where there is a central experimental station with nurseries. The experimental farm in the past was in charge of a Superintendent, who was invalided out of the service during the year. The central agricultural station is now in charge of a Provincial Superintendent of Agriculture; Mr. E. I. Nisbett was the officer in charge. The training of the agricultural apprentices under a European Agricultural Instructor, Mr. D. C. Edwards, is carried out here, the learners being in close touch with all agricultural activities. The Protectorate of Sierra Leone, being divided into three provinces for political administration, these provinces are also put in charge of provincial superintendents of agriculture. During the year under review, the appointments were as follows:—

Northern Province	Mr. R. R. Glanville
Central Province	Mr. J. W. D. Fisher
Central Province	Mr. J. V. R. Brown (9th to 31st December)
Southern Province	Nil.

Owing to the appointment of Mr. J. V. R. Brown so very late in the year, the Southern Province was without a provincial superintendent of agriculture throughout the year.

Under each provincial superintendent of agriculture are native officers called district agricultural assistants. Owing to the lack of trained men, the activities of the department have had to be curtailed and often the pinch was very severely felt. Fortunately, this will be remedied as soon as the present batch of twenty-four apprentices is trained.

89. The Director of Agriculture was stationed in Freetown, acting as Commissioner of Lands and Forests, from the 1st to 31st January. He remained in Freetown to arrange for the Sierra Leone Agricultural Show in connexion with His Royal Highness the Prince of Wales' visit to the Colony on 6th April. He proceeded on leave on the 1st April. Mr. R. R. Glanville was stationed at Njala during the early part of the year; he acted as Director of Agriculture from the 1st to 31st January. He was later relieved by Mr. J. W. D. Fisher and proceeded to the Northern Province to take up his duties.

Mr. J. W. D. Fisher proceeded in March to the Pendembu and Konno Districts of the Central Province to organize the work of his province. His headquarters were temporarily made at Daru. From the 1st April to the 10th October, he was Acting Director of Agriculture and in charge of the Central Province.

Mr. E. I. Nisbett, Provincial Superintendent of Agriculture, was officer in coarge at Njala from March to the end of the year.

Mr. D. C. Edwards, Agricultural Instructor, was stationed at Njala, except for occasional visits to the Cotton Ginnery at Boia and one visit to Bo School.

II—AGRICULTURAL INSTRUCTION.

90. I am glad to report that the Agricultural Instructor was in residence at Njala for the whole session, thus a continuous course of studies and instruction was carried out for the first time.

91. The duties of the instructor are to train the agricultural apprentices and to give the fifth form boys at the Agricultural Training College, Njala, a course of teaching in Nature study and elementary agriculture.

92. There were thirteen apprentices at the beginning of the year and during the year eleven further appointments were made. One of the apprentices, J. S. Bobo, having had previous training and experience in swamp rice cultivation, was engaged throughout the year in the Gbangbama and Sembehun Districts of the Southern Province as rice instructor.

93. The apprentices are trained in theory and practice. Theoretical training includes agriculture, agricultural botany and agricultural chemistry. The teaching so far has been of an elementary character, as none of the apprentices had a science training previous to his arrival at Njala.

The practical work is carried out on the apprentices' model farm. Each student has a plot ; these have been well kept. The students thus can carry out themselves in a practical manner the various treatments and principles learnt in the classroom. The keeping of diaries and recording of facts form an important part of their work. Beyond the students' model plots, experimental plots have been made by them with Quande cotton, rice and turmeric. On the Quande plot, seasonal trials were made and seed selection carried out.

94. A course of physical training for the apprentices was started, and has proved a distinct benefit to them.

95. The apprentices are encouraged in organization and management. They run their own mess and are encouraged in the playing of games, in which they take an active part.

96. During the year instruction was given to the fifth form boys at the Njala Agricultural Training College.

III—AGRICULTURAL DEVELOPMENT.

Cotton.

97. A further attempt was made to establish the cultivation of Allen Long Staple variety of cotton. Fresh seed was imported from Nigeria and distributed principally in the Konno and Pendembu Districts of the Central Province, and the Koinadugu and Bombali Districts of the Northern Province. As the early sowing of this in 1924 was damaged by the heavy rains, late season sowing was attempted in 1925 ; this was chiefly done during August and September.

98. In the north of Koinadugu District cotton sites were selected, but in July the owners were not willing to plant cotton, with the result that only a very small area was sown in that district. In northern Bombali District, a large area was planted. These plots have not done well, due to insect injury, excessive soil moisture and, when planted too early, too much rain when bearing and when sown in September the crop suffered from the arid conditions.

99. In the Konno and Pendembu Districts of the Central Province, with the co-operation of the chiefs and people, the planting of Allen Long Staple cotton has been energetically pursued. Every encouragement was given to the people and the seed was distributed free.

It is encouraging to note that this cotton has proved more successful in the Konno and Pendembu Districts of the Central Province than in the two districts mentioned above of the Northern Province.

100. The cultivation of the local variety of cotton, Quande, has been encouraged. This cotton is found growing in the usual mixed cropping on upland farms and it is also sown by the natives in their "yards" or gardens.

An attempt has been made to get the people to sow this cotton on farms as a single crop. The Provincial Superintendent of the Northern Province reports that the area under this variety is apparently on the increase. In the Konno and Pendembu Districts of the Central Province, there were thirty-four Quande cotton farms, of a total area of twenty-four acres. Of these farms 58·8 per cent. are very healthy, or fairly healthy.

101. Quande cotton is grown by the natives throughout the Protectorate, but only in small quantities, and owing to other native varieties of cotton as Fandewa and Ndouli being sown on the same farm, cross fertilization has taken place. The Quande plot this year showed considerable variation in crosses. In the Northern Province there is a great demand for Quande cotton, where it sells locally for about 6*d.* per lb. for converting into native thread and country cloths.

Coco-nuts.

102. The extension of the scheme for the planting of coco-nuts along the coastal areas of the Southern Province has been actively carried out. The work has been done by Agricultural Assistant C. A. Tucker under the supervision of the Provincial Commissioner and the political officers of the districts.

103. During the year 35,836 nuts were collected and sown in 277 nurseries, and 18,132 seedlings were planted in 142 plantations.

104. Steady progress has been made in this scheme by the co-operation of the chiefs and people with Government. His Excellency the Governor visited some of these coco-nut growing chiefdoms at the end of the year and stated in a minute as follows :—

> "I was much impressed with the healthy appearance of the plantations and of the promising prospects of this most important industry, and I shall continue to watch developments with much interest. Great credit is due to the district commissioners and instructors concerned for the enthusiastic and systematic way in which the work has been carried on, and I desire to record my appreciation of the services of Mr. Ross, Mr. Stocks, Major Heslip, Mr. Hamblin Smith ; in this connection Instructor Tucker also deserves mention. I am not clear on whom has fallen the bulk of the work in the Pujehun District and should like his name reported."

Cacao.

105. Cacao planting has been steadily carried on in the Southern Province. In the eastern half of this province where this crop has been established some years, considerable development has taken place. The work has been under the supervision of the Commissioner and his political officers who have under them an Agricultural Assistant, G. Meama, and a few trained messengers. Government supervised nurseries and plantations were made, and beyond this the natives themselves have planted cacao freely.

This is confirmed by Agricultural Assistant G. Meama, who states "it is impossible to record the amount of trees planted durng the year, as in every village cacao was planted out at stake."

106. Considering the low state of the West African cacao market, the price offered by traders has not been discouraging. 11*s.* to 12*s.* a bushel was paid at Whydaru when the price of palm kernels was 6*s.* 6*d.* per bushel. During 1925 fifty-five tons of cacao were exported from the Southern Province as compared with twenty tons in 1924.

107. A small amount of cacao is grown in some of the Mende chiefdoms of the Pendembu District of the Central Province. The cultivation is gradually spreading in villages.

108. It is proposed to extend the cultivation of cacao in the forest or big bush areas of the Bombali and Koinadugu Districts of the Northern Province.

By the end of the year over 3,000 seedlings were raised in baskets at Makump. The seed were gathered from the cacao trees planted in the Soudan Mission compound at Makump.

Swamp Rice.

109. The Scarcies River method of cultivating swamp rice on the tidal mud flats of rivers has been further extended in the Southern Province, chiefly in Sembehun and Gbangbama Districts. The work was in charge of three rice instructors and a rice planter, who were under the supervision of the district commissioners of Sembehun and Gbangbama Districts. The rice instructor reports that the following areas were planted :—

Sembehun District	...	...	$48\frac{3}{4}$ acres
Gbangbama District	...	...	50 acres.

In the Sembehun District, planting was done on the Bagru River in the immediate neighbourhood of Sembehun and down the river, whereas in the Gbangbama District farms were made on the Gbangbatoke Creek, Victoria Creek, Jong River and Mano Bagru Creek.

110. The clearing of the swamps of mangrove tree has been an important programme during the year. Large areas have been cleared and in the near future, extensive lands will come under paddy cultivation. The preparation of a mangrove swamp suitable for rice cultivation is slow, as after felling and removal of the trees the mud flats should be left fallow for a year or so. Freshly cleared mangrove swamps do not produce good rice crops, the conditions for rice improve after a few years, when bumper successive crops can be grown for many years. The rice crops on the older clearings in these swamps were excellent, the tilling was good, and the plants tall, strong and healthy.

111. Beyond the utility of mangrove swamp for the production of rice, the people have been encouraged in the planting of paddy in inland swamps. Such crops in the Gbangbama and Sembehun Districts were excellent. Some of these swamps had the seed broadcasted on the mud and others had seedlings transplanted from nurseries to the swamp, the latter method produced better looking crops and also the transplant tilled more freely. There is quite a large area of inland swamps under cultivation in these two districts.

112. In the Mano River District of the Southern Province, swamp rice was grown around Mano Salija and Sulima. This work was supervised by the agricultural assistant stationed at Zimi. The 1925 crop at Mano Salija, which was sown on the same swamp as 1924, is reported to have done better than the previous year. This has interested the people and will be of great assistance in swamp rice propaganda work in that area.

113. Steps have been taken to encourage and interest the people in the Pendembu District of the Central Province to plant rice in inland swamps by the transplantation method. $24\frac{1}{2}$ bushels of rice were distributed to various chiefs in that district. The planting was supervised by a rice instructor. It is reported that the results are very satisfactory. I regret the yields are not to hand yet. The people have been interested in this method of growing their staple crop.

Ginger.

114. The most important ginger growing areas are the Gba Mende chiefdoms of the Central Province and in and around the Colony. During the year, the services of a ginger Instructor, Mr. T. D. Swaby, a Jamaican, were procured. He toured the ginger areas of the Colony and Protectorate instructing the people. The object of the advice and instruction being an attempt to make the ginger growers realize the importance of producing a well peeled, clean white ginger for the market. At the close of the year the Director of Agriculture held at Moyamba a mass meeting of ginger growers, merchants and small buyers. It was later decided after consultation with the Chamber of Commerce that a serious attempt should be made to ask the natives around Moyamba to produce 100 tons of peeled white ginger. At the close of the year the ginger season had not commenced.

115. The cultivation of ginger has spread during the past year to the chiefdoms of the Southern and Northern Provinces adjoining the Gba Mende chiefdoms of the Central Province. Ginger "seed" was supplied to the Commissioner, Northern Province, for distribution, which was done rather late in the season owing to delays in purchasing "seed" locally.

Castor Beans.

116. An attempt has been made to increase the sowing of castor seed. This plant has been growing in the past in a few villages in various parts of the Protectorate, where it has been looked upon as a curiosity and "medicine" plant. The castor plant is known to be an exhaustive crop to the soil, therefore the department has advocated its sowing in and around native towns and villages in the gardens and rubbish heaps. The plant should grow well throughout the Protectorate. During 1925 the amount of seed available for sowing was unfortunately small, consequently there will not be much offered for sale.

117. The attention of the people has been directed in the growing of the large seeded variety. The common type found in this country has a small seed which yields a low percentage of oil.

Maize.

118. The South African varieties of maize distributed in 1924 have been grown chiefly in the Southern Province where its cultivation is spreading. The District Commissioner, Gbangbama, not only widely distributed the seed throughout his district but also grew a plot of maize at his headquarters and harvested before the close of the rains twelve-and-a-half bushels of seed which were distributed for late season sowing, and a further plot was planted by him at his headquarters. The experimental farm at Zimi produced 882½ lb. South African maize seed.

General Remarks.

119. Advice and assistance have been given to chiefs and people on several other crops besides the above mentioned. The united efforts of political officers and officers of this division have been energetically maintained throughout the year in propaganda work and development of the main crops. Although four provincial superintendents of agriculture appear in the staff list for 1925, there was one vacancy practically throughout the year. One officer was stationed at Njala and only two were available for the provinces; this necessitated considerable reliance on political officers for their assistance in the various schemes.

IV—BOTANICAL AND ENTOMOLOGICAL SPECIMENS.

120. During the course of the duties of officers of this division, botanical and herbarium specimens have been collected for the headquarters office, Kew and other places. The entomological side has also not been overlooked, as the pests are varied and numerous. Pests have been collected and forwarded to the Entomologist, and remedial or preventative measures recommended have been carried out where and when possible.

V—OIL-PALM.

121. Investigations for the development of the oil-palm were started on an intensive scale during the year, as this vital question was before the Government. Numerous enquiries and investigations were undertaken by officers.

Investigations with regard to the important questions of distribution, varieties, yields, etc., were started and are still being done whenever the duties of officers take them into the districts where there are palmeries. These investigations take time, the information collected from natives having to be tested, as such statements often are vague or not quite accurate, because the natives previously had not considered the various points raised and consequently it is something new for them to give facts and figures. Beyond this, the individual trees in the various palmeries are very variable, which is reflected in the quality and yield of the fruit. Therefore investigations with regard to some aspects of the question cannot be hurried, especially as the officers with their many duties, have not been in a position to give too much time to research in a large number of palmeries.

VI—COTTON GINNERY, BOIA.

122. The Cotton Ginnery at Boia, a generous gift of the British Cotton Growers Association, was opened by His Excellency the Governor on the 23rd December, 1924; therefore the year under review was the first time it operated.

123. When there was sufficient cotton for ginning, Mr. D. C. Edwards, Agricultural Instructor, supervised the ginning with the assistance of the agricultural apprentices under him. The co-operation and assistance of the Railway Department was invaluable. A native mechanic was loaned to the ginnery for the ginning season, and beyond that I wish to place on record the interest taken and willing assistance giving by Mr. T. Reed, the European Fitter-in-charge at Boia. Even when the ginning season was over, throughout the year this officer in his spare time periodically tended and ran the engine and machinery to keep them in good order.

124. The 1924 cotton harvest fell far short of the yield that was anticipated in the middle of the growing season. The late rains, with the assistance of disease and pests, reduced the crop. In spite of that, Allen Long Staple cotton of good quality was sent to the ginnery, and when sold by the British Cotton Growers Association in England the prices ranged from 10·5*d.* to 14·25*d.* per lb., based on September American Futures at 12·50*d.* per lb.

125. A total of twenty-one bales of cotton was the first year's output. The first bale of cotton that was ginned was sent to the Sierra Leone Pavilion as an exhibit at the British Empire Exhibition, 1925. The remaining twenty bales were shipped home and kindly disposed of by the British Cotton Growers Association on behalf of the Government. The total receipts from the sales were as follows:—

Twenty Bales Cotton:	£	*s.*	*d.*	£	*s.*	*d.*
Eight bales	56	12	0			
*Less charges	19	18	11			
				36	13	1
Ten bales	68	7	0			
Less charges	2	19	1			
				65	7	11
Two bales	13	3	0			
Less charges	0	13	6			
				12	9	6
Thirty-three bags cotton seed ...	13	8	2			
Less charges	5	15	5			
				7	12	9
One bale	5	3	0			
Less charges	0	10	7			
				4	12	5
Total				£126	15	8

*This includes freight on the full shipment of twenty bales.

126. The purchase of the seed cotton on behalf of Government for the ginnery was done by merchants and political officers. The merchants were paid ¼*d.* per lb. commission on purchases. The following prices were paid for seed cotton:—

Allen Long Staple—first quality	2½*d.* per lb.
Allen Long Staple—second quality	2*d.* ,,
Quande (native cotton)	1½*d.* ,,

VII—THE IMPERIAL ENTOMOLOGICAL CONFERENCE, 1925.

127. The Director of Agriculture was the Sierra Leone delegate at the Imperial Entomological Conference, held in London during the month of June.

VIII—EXPERIMENTAL FARMS, SUB-STATIONS, ETC.

(*a*) Njala Experimental Farm.

128. Mr. S. L. Moseley, Superintendent of the Experimental Farm, was in charge during the first five months of the year. Mr. E. I. Nisbett, Provincial Superintendent of Agriculture, took over the farm on Mr. Moseley's retirement and was made officer-in-charge.

129. The work on the farm was considerably handicappediby the shortage of labour during the months of April and May; this delayed the preparation of land and consequently the sowing of annual crops in many cases was on the late side.

Permanent Plantations.

130. The cultural operations of the established plantations were carried out during the year. Those plots that came into bearing had their yields harvested. The following new plantations were started :—

(*a*) *Banana—Canary.*—One acre was planted on the north farm.

(*b*) *Banana—Lacatan*—A small area was planted with the Lacatan banana. This species was found growing in the Port Lokko District by Mr. Sanderson and Dr. Dunlap of Messrs. Elders and Fyffe, who at the time were investigating the possibilities of banana cultivation on a commercial scale. This variety of banana is said to be resistant to Panama disease.

(*c*) *Grafted Orange.*—Three hundred grafted stock of Washington Navel and Late Valencia oranges were ordered from South Africa. Unfortunately the plants travelled very badly, resulting in a very small number of survivors. Forty-three Washington Navel and forty-five Late Valencia were planted out. These have had to be carefully nursed and watched.

(*d*) *Gorli* (*Oncoba echinata*).—Two plots, one under shade and one without shade, were planted up on the north farm with a view to the collection of information and data on this plant under cultivation.

(*e*) *Oil-palm.*—A small plot was planted with the Kpolei variety.

(*f*) *Plantain.*—One acre was planted on the north farm.

(*g*) *Tea.*—A small plot was started on the south farm.

Established Plantations.

131. *Nigerian Oil-palms.*—This six-year old plot was again carrying a heavy crop of fruit heads, which are still on the small size as the plantation is a young one. This plot is divided into a "pruned" and "unpruned" area ; in the former case each tree is not allowed to carry more than eight heads, whereas on the latter area the trees are allowed to mature all fruit heads produced. The total number of fruit heads harvested were 3,382 during 1925, and on 31st December the following number of fruit heads were on the trees :—

Pruned section	...	...	...	343 heads
Unpruned ,,	...	...	...	1,837 ,,

Limes.—The Dominica lime plot on the south farm only gave a yield of 44·9 barrels of limes per acre. This is a considerable falling off to previous years, whereas the local variety of lime on the north farm gave a yield of 116·9 barrels per acre. The former plot is on a sloping laterite gravel and the latter on flat alluvial soil.

Kola.

132. This crop suffered seriously from the attack of Psyllid insects. The kola plot No. 4 on the south farm yielded sixty-one pods from an area of 1·26 acres. On the north farm the yields of the two kola plots were as follows :—

Plot No. 2 north farm	...	...	...	777 pods
Plot No. 8 north farm	...	...	...	1,390 ,,

Many of these pods were small.

Coffee.

133. The yields of the coffee plots are given in fresh cherries as all seed has been kept for planting :—

Plot No.	Area in Acres.	Farm.	Variety.	Yield in Fresh Cherries.
57	1·08	South	Canephora	238 lb.
58	·73	,,	Robusta	927 ,,
3	·78	,,	Stenophylla	70·75 ,,
9		North	Robusta	271·8 ,,
9		,,	Arabica	27·75 ,,
9		,,	Liberian (small seed) ...	366·75 ,,
9		,,	Liberian (medium seed) ...	31·1 ,,
9		,,	Liberian (large seed) ...	396·75 ,,

Annual Crops.

134. The land that had been cropped continuously for thirteen years with annual crops was limed and planted up with pigeon peas which, at the end of the year, was turned into the soil as a green manure.

The main features of the annual crop experiments were—

(*a*) manuring

(*b*) seasonal of cotton.

Manurial trials were carried out with rice, ginger, ground-nuts, cotton and cassava.

Rice.

135. The following were the average yields per acre from the various plots. The trials were carried out with the "Jobbi" variety of upland rice.

Manure.	Average Yield per Acre in Bushels.
Lime	13·74
Pit stuff	8·78
Lime and pit stuff	10·34
Ammonium sulphate	16·25
Lime, pit stuff and ammonium sulphate	13·13
Lime, pit stuff, potash and super phosphate	10·66
Ammonium sulphate, tin, pit stuff, super-phosphate, and potash	8·17
Control	13·15

The above yields are given in husk rice, and the average weight of a cut bushel of this rice was 42·33 lbs.

The sulphate of ammonia being very soluble and hence a quick acting manure, probably showed its effect by producing the heaviest yield. The lime plots gave the second best returns following the control plots, which had no artificial manures or pit stuff applied.

Ground-nuts.

136. The following are the average yields per acre from the various manurial trials :—

Manure.	Yields in lb per Acre.
Lime	550
Super phosphate	536
Lime and super phosphate	470
Lime, super phosphate, potash and ammonium sulphate	428
Lime, super phosphate and potash	490
Control	500

The crop was sown slightly on the late side, but it maintained a healthy appearance. The above yields are on the light side.

Cotton.

137. Allen Long Staple was the only variety sown in this experiment, which consisted of both manurial and seasonal trials ; the object of the latter was to find a suitable time at the close of the rainy season for sowing this variety of cotton. The results of these trials are interesting in view of the fact that the Government is taking steps to establish cotton cultivation in Sierra Leone, and in connexion with this Allen Long Staple cotton has played an important part in the cotton growing campaign during the last three years.

138. The following were the yields of ginnable cotton given in lb. of seed cotton per acre :—

Unacclimatized Allen Long Staple Cotton.

Date of Sowing.	15th July.	1st August.	15th August.	1st September.
Control	208·75	238·0	259·75	298·5
Lime	291·0	285·5	371·50	458·5
Lime and ammonium sulphate	292·0	288·5	379·00	435·5

Acclimatized Allen Long Staple Cotton.

Manure.	Date of Sowing.	Yield Per Acre.
Nil	15th August	301·2
Nil	1st September	266·2

The above figures are only for good ginning cotton.

139. The 1925 Allen Long Staple trials at Njala call for comment, as they are not only interesting but important. It must, however, be remembered that cotton is a very seasonal crop, therefore the 1925 trials must not be taken as final.

The following table gives the date of sowing and the total number of inches of rain that fell on each plot from sowing to harvesting :—

Date of Sowing.	Total Inches of Rainfall on Crop.
15th July	75·88
1st August	68·93
15th August	58·56
1st September	44·59

Harvesting of cotton was finished by the middle of February, 1926, with no further rain. There was no rainfall from 4th December, 1925 till 14th January, 1926, when 1·1 inches of rain fell.

140. The effect on the crop of the drought from 4th December, 1925 to 14th January, 1926 was very marked. There was at first heavy boll shedding ; most of these bolls were very young and immature, this was followed by leaf shedding towards the end of December and early January when the harmattan wind was blowing. It was obvious the plants were suffering from severe desiccation. The rain on 14th January revived the crop. Cultural operations were carried out to reduce evaporation from the soil and the plots were very carefully watched.

Stainer insects were a serious pest ; they appeared when the drought set in. These were trapped daily and the pest was kept under reasonable control.

Up to the middle of October there was little marked difference in the appearance of the plots, the early sown plots had put on very slow growth during the heavy rains, but by the end of November the manured plots were strikingly better than the control plots, and considerable growth had been made.

The Njala 1925 cotton trials showed that it is possible to obtain 200–300 lb. seed cotton per acre from land that had previously carried six-year old bush ; that the application of lime at the rate of 1 ton per acre increased the yield approximately 50 per cent., and that a dressing of lime and sulphate of ammonia at the rate of 2 cwts. per acre also increased the yield by 50 per cent. per acre over the control plots.

The sowings on the 15th August and 15th September gave the best yields. Stainers—a common pest in Sierra Leone—is a controlling factor in the ultimate yields.

Ginger.

141. Owing to the shortage of labour and the difficulty in procuring sufficient "seed," the crop was sown late ; consequently the harvest was a very light one.

The following table shows the average yields per acre from the several manurial plots :—

Manure.	Yield per Acre.
Lime	1,130·0 lb.
Pit stuff	1,322·0 lb.
Lime and pit stuff	1,142·0 lb.
Potash	960·0 lb.
Lime, pit stuff and potash	1,455·0 lb.
Lime, pit stuff, ammonium sulphate and super phosphate	1,251·0 lb.
Lime, pit stuff, ammonium sulphate, super phosphate and potash	1,532·0 lb.
Control	784·0 lb.

There was a marked increased yield from each of the manured plots as compared with the control or non-manured plot.

Cassava.

142. The land is still under this crop, which was planted at the end of the rains and has kept green and fresh throughout the dry season. There is nothing special to report.

Efwatakala Grass Pasture.

143. At the end of the season, after seeding, the grass was cutlassed. This pasture had a rank growth of grass and weeds.

Nurseries.

144. Many various plants have been raised in the nurseries. A part of the nurseries has been given up to tomato growing, the crop being still under cultivation. The first seedlings were diseased before reaching maturity, but after liming the soil the plants have been more healthy and strong.

KABINKOLA EXPERIMENTAL FARM.

145. This farm is in the Safroko Limba Chiefdom of the Bombali District, Northern Province. The land has previously been under young bush, about six years old. The experiments were confined to ginger and cotton. Although the harvest data is not to hand at present, yet observations can be made on some of the plots.

Allen Long Staple Cotton—Seasonal Trials.

146. Fortnightly sowings were made from the 15th July to the 1st September: of these, plots that were sown on 1st August promised to give the best results with a probable yield of 200 lb. seed cotton per acre. A plot was sown on the 12th October; it germinated well and made good progress, but when the arid conditions started progress ceased and the plot was a failure.

Allen Long Staple Cotton—Manurial Trials.

147. The seed was sown on the 19th August.

Quande Cotton—Manurial Trials.

148. Experiments on similar lines to that with Allen Long Staple were carried out and results are anticipated as stated above.

Lengupa Cotton.

149. The seed of this cotton was obtained from South America. This is a very slow maturing cotton. Although sown in June, it did not start to bear until six months later. Unfortunately the germination was poor, so the plot is very gappy.

Ginger.

150. The trials consisted of planting on the ridge and on the flat, and also manurial trials with lime and potash with this crop planted on ridges.

MALAFOREA EXPERIMENTAL FARM.

151. This farm is about two miles from Kaballa, the headquarters of the Koinadugu District, Northern Province. The land was previously covered with old orchard bush.

The experiments at this station were on similar lines to those at Kabinkola with the exception that, apart from two ginger plots, no manures have been used.

Allen Long Staple—Seasonal Trials.

152. These were sown on 15th July, 5th August, 26th August and 16th September, and a small plot in early November. The germination was good, but a number of seedlings died when 12 inches or under in height.

Cotton—Other Varieties.

(*a*) *Nanga.*—apparently a perennial form of the native Quande cotton. This was sown on 30th June. The plot sown on ridges has done better than that on the flat.

(*b*) *Dogoyereh.*—This is a local type of cotton. The seed was obtained from Morofindugu. It is a quick maturing dwarf variety with a white but very short staple. The plants were bolling heavily. It is sown by the natives after harvesting their first fundi crop.

(*c*) "French" cotton obtained by Mr. A. V. E. Pearse, District Commissioner, from Mamou, French Guinea. The seed proved to be mixed of two varieties.

(*d*) Nyassaland Sunflower from Uganda: poor germination.

(*e*) Allen No. 2 from Uganda also proved to be of poor germination.

(*f*) Cambodia from South India: the germination was poor.

Castor Beans.

153. Half an acre was sown with the large seeded variety. The plants are healthy and doing well.

Ginger.

154. The ginger was planted in the same manner as on the Kabinkola farm. The crop has done well and the results will probably be similar to those of the Kabinkola plots.

KAINKORDU EXPERIMENTAL COTTON FARM.

155. In the Sowa Chiefdom of the Konno District, Central Province.

Trials were carried out with the following cottons :—Allen Long Staple, Allen Long Staple (acclimatized seed), Quande, Lengupa and Nanga.

The final reports relative to these plots are not to hand. In the case of Allen Long Staple, manurial and seasonal planting trials were carried out. With regard to Quande, planting distance trials were made, together with manurial tests. The plants were found to be very mixed, owing to cross fertilization with Fandewa, another common native variety of cotton.

BEDU EXPERIMENTAL COTTON FARM.

156. This farm is situated two to three miles from Kailahun in the Luawa Chiefdom of the Pendembu District, Central Province. Trials similar to those on the Kainkordu farm were started here. The results have been very poor and many plots were failures.

JAIAMA EXPERIMENTAL COTTON FARM.

157. This farm was started at the request of the United Brethren in Christ Mission and in co-operation with the Missionary-in-charge on the Mission property at Jaiama in Konno. The initial clearing and digging of land was undertaken at Government expense, but all further work was carried out by the Mission boys. Seasonal trials were made with Allen Long Staple cotton and manurial trials with Quande. Lengupa cotton was sown, but this did not grow successfully.

RICE DEMONSTRATION FARMS.

158. To encourage the people of the Pendembu District to plant more rice in swamp and to adopt the Temne transplanting method, nine demonstration farms were made in the Pendembu District of the Central Province. It is reported that the results are satisfactory. Many of such farms were made in the Southern Province on the Bagru River, Jong River and Victoria Creek.

ZIMI MODEL FARM.

159. The model farm at the headquarters of the Mano River District of the Southern Province has been maintained. The annual crop plots were planted up with maize, upland rice, native cotton and chillies.

Maize.

160. The early sown crop in April was damaged by the heavy rains, consequently the yield was poor, but the late season sown crop yielded 882½ lb. of good quality maize. Although this yield was on the low side, good quality seed has been harvested for distribution.

Rice—Upland.

161. An experiment was made in growing rice on the same land for two successive seasons. In 1924 this plot yielded twenty-four bushels of husk rice per acre, but during the year under review only six bushels of husk rice per acre were harvested.

Cotton—Native Quande.

162. This crop put on excellent growth at first, but towards the end of the rainy season when the rainfall was at its highest, the crop became diseased ; this was apparently due to root asphyxiation, owing to the water-logged state of the land.

Chillies.

163. This crop was left on the plot from 1924. The 1925 yield proved to be a poor one, a bushel of dried chillies from a quarter of an acre. Two new permanent crop plots were laid down.

Coffee—Liberian.

164. An acre was planted with this coffee. The crop has put on good growth.

Sisal Hemp.

165. A small plot was planted with this fibre plant. The established plot of cacao has been maintained ; the plants, however, have put on slow growth.

Nursery.

166. During the year the nurseries were extended and sown with the following:—oil-palms: Nigerian, Henoi, Tugboi and Kpolie.

VII—GENERAL AGRICULTURE AND NATIVE CROPS.

167. On the whole 1925 was a very successful year for the native farmer in that the brushing of farms for upland rice was carried out in good time, and the weather in March and April permitted successful burning of the brushed areas, consequently the rice and other minor mixed crops, which are sown intermingled with rice, e.g. millets, maize, benniseed, peppers (chillies), cotton and cassava were sown in due season on the cleanly burnt farms, where weeding was reduced to a minimum. The rains also suited the rice crop in most districts. The rice yields were good and depended on the quality of soil, which in shifting cultivation depends on the age of the bush which was brushed and burnt on the farms. In chiefdoms where there was good secondary bush excellent yields were obtained. The rice from the enormous tidal areas of the two Skarcies rivers have been well maintained, and it is gratifying to note an increased area of inland swamps brought under cultivation during 1925.

168. Ginger is one of the few crops that is not planted as a mixed crop on farms. This is sown in small patches of land, usually on part of the previous year's rice farm, or in any odd clearing. The farmers in the Colony and Kpa Mende chiefdoms are the principal producers. In early 1925 the price of native scraped ginger again ruled high, resulting in a record export during 1925. Considering the rush to sell all available ginger during the boom, a fair amount of "seed" was reserved and the planting maintained. The present season's price has fallen below half what it was at this time in 1925.

169. The ground-nut crop in the Northern Province, where it forms an important commercial crop, suffered in several chiefdoms from disease. Steps have been taken to supply these farmers with fresh sound seed.

170. There has been a revival of the piassava industry by increased exports, due to purchases for the German market.

171. The trade in palm kernels and palm oil has been maintained and the reports to hand are normal—"fair" to "good."

172. The harvest prospects of the minor export products, as peppers (chillies) and benniseed (sesame), are good.

VIII—AGRICULTURAL SHOW.

173. It was at first proposed to hold an Agricultural Show in Freetown under the auspices of the Local Agricultural Society and another at Makeni in the Northern Province. But when the plans for the visit of His Royal Highness The Prince of Wales were under consideration, it was decided to hold a Pan-Sierra Leone Agricultural Show in Freetown from the 6th–8th April. The Show was organized by a committee in Freetown with the assistance of political officers in the Protectorate. The Director of Agriculture was secretary until he proceeded on leave on 1st April, when the secretaryship was taken over by Dr. F. J. Martin, the Agricultural Chemist.

174. His Royal Highness The Prince of Wales opened the Show on the afternoon of the 6th April.

175. The exhibits were a very comprehensive representation of the cultivated and natural products of the Protectorate and Colony. Cattle were also shown and examples of native arts and crafts. Native dances and jugglers and fireworks displays, as "side shows" formed features of the Agricultural Show, which was held on the Recreation Grounds, Brookfields.

IX—METEOROLOGICAL.

176. As Appendix A, I attach the meterorological data of various stations in the Protectorate and Colony, and Appendix B gives the monthly rainfall of the same stations for the past ten years.

I have the honour to be,

Sir,

Your obedient servant,

DOUGLAS W. SCOTLAND,

Director of Agriculture.

APPENDIX A.

METEOROLOGICAL DATA, 1925.

Batkanu.

Month.	Shade.		Total Rainfall for Month.
	Maximum, 5. p.m.	Minimum, 5 p.m.	
January ...	94·4	53·5	...
February ...	97·5	60·53	·07
March	99·58	60·97	1·56
April	95·70	63·20	3·58
May	93·30	70·90	10·27
June	88·87	71·00	12·79
July	85·84	69·80	11·69
August	85·10	71.58	17·02
September ...	87·07	70·97	19·24
October ...	89·94	70·16	20·20
November ...	90·80	70·37	14·00
December ...	91·00	68·06	·65

Bo.

Month.	Shade.		Total Rainfall for Month.
	Maximum, 5 p.m.	Minimum, 5 p.m.	
January ...	91·42	63·23	...
February ...	93·89	67·36	·38
March	92·55	69·48	5·26
April	91·73	70·7	7·05
May	90·52	70·29	7·05
June	86·77	70·84	15·66
July	83·38	70·84	18·76
August	82·16	70·84	26·87
September ...	84·60	70·90	15·20
October ...	86·55	70·84	10·65
November ...	89·37	71·20	9·48
December ...	89·60	70·90	·83

Bonthe.

January ...	87·61	67·13	...
February ...	91·89	70·71	...
March	91·23	71·13	1·72
April	91·30	72·60	5·47
May	88·81	71·87	9·21
June	86·73	71·00	26·76
July	89·00	70·84	45·79
August	91·58	70·32	22·73
September ...	88·70	70·13	23·70
October ...	86·84	70·48	7·01
November ...	89·43	70·80	3·02
December ...	89·10	70·29	·41

Daru.

January ...	89·55	58·55	...
February ...	93·86	66·50	1·78
March	93·13	68·61	3·28
April	92·63	69·93	7·72
May	91·06	71·39	15·00
June	87·87	71·17	11·68
July	87·03	71·29	8·59
August	84·45	70·77	11·00
September ...	85·83	70·56	13·96
October ...	86·81	70·10	9·09
November ...	86·90	70·20	12·86
December ...	87·32	67·58	·10

KABALLA.

Month.	Shade.		Total Rain-fall for Month.
	Maxi-mum, 5 p.m.	Mini-mum, 5 p.m.	
January ...	89·61	55·48	...
February ..	93·50	64·96	·77
March	93·65	67·26	3·91
April	92·17	69·60	1·46
May	90·77	68·13	9·08
June	86·27	66·87	15·79
July	83·16	67·23	10·67
August	81·81	67·81	11·21
September ...	83·03	67·57	14·31
October ...	84·97	67·00	18·03
November ...	86·20	67·27	5·76
December ...	87·42	59·90	1·08

KISSY.

Month.	Shade.		Total Rain-fall for Month.
	Maxi-mum, 5 p.m.	Mini-mum, 5 p.m.	
January ...	89·26	68·97	...
February ...	92·04	72·25	·16
March	92·77	73·55	·86
April	90·63	73·87	2·38
May	89·23	73·55	6·10
June	86·90	71·57	13·59
July	82·93	71·77	24·82
August	82·20	71·68	42·38
September ...	83·07	71·30	23·70
October ...	85·95	71·85	13·40
November ...	87·15	72·26	6·65
December ...	86·51	72·90	·17

MAKENI.

January ...	91·64	59·03	...
February ...	94·89	58·78	·46
March	96·00	61·52	2·51
April	92·43	72·70	6·40
May	90·39	72·45	11·52
June	87·00	71·50	16·24
July	84·84	71·07	14·44
August	84·48	71·29	28·05
September ...	85·90	71·10	21·39
October	87.45	70·71	26·22
November ...	88·60	72·03	6·70
December ...	89·71	68·64	·07

MOYAMBA.

January ...	92·61	64·19	...
February ...	94·00	70·21	3·32
March	94·77	70·61	2·61
April	90·63	72·00	4·79
May	88·45	71·87	13·35
June	85·60	71·43	13·91
July	82·90	71·45	17·80
August	80·74	70·87	24·50
September ...	81·90	71·17	13·19
October ...	86·06	71·16	13·30
November ...	89·50	72·00	6·99
December ...	90·71	70·45	·75

PUJEHUN.

MONTH.	SHADE.		Total Rain-fall for Month.
	Maximum, 5 p.m.	Minimum, 5 p.m.	
January ...	90·79	68·29	...
February ...	...	69·66	1·22
March	93·78	70·63	2·47
April	91·87	72·00	8·74
May	90·67	72·06	7·37
June	86·36	72·13	22·59
July	84·67	72·04	28·53
August	83·19	71·32	21·10
September ...	84·00	71·90	26·66
October ...	87·00	71·81	10·52
November ...	90·17	71·37	10·59
December ...	89·77	70·97	1·27

NJALA.

MONTH.	SHADE.		Total Rain-fall for Month.
	Maximum, 5 p.m.	Minimum, 5 p.m.	
January ...	91·87	61·12	...
February ...	95·22	67·00	0·62
March	93·03	69·36	1·97
April	92·66	71·41	4·64
May	91·80	69·67	10·66
June	87·96	69·93	11·27
July	85·64	69·74	16·23
August	84·84	67·16	24·34
September ...	87·76	70·50	16·56
October ...	88·90	69·53	13·05
November ...	92·93	70·83	13·01
December ...	89·46	67·07	0·87

Appendix B.

RAINFALL, DATA 1916-1925.

BATKANU.

Month.	1916.	1917.	1918.	1919.	1920.	1921	1922.	1923.	1924.	1925.	Average.
January	...	...	...	...	...	...	...	...	·30	...	·030
February	1·04	2·28	...	·25	...	...	...	·05	1·00	·07	·469
March	2·50	·74	2·95	4·09	·55	·25	·02	1·22	..	1·56	1·388
April	4·55	1·39	4·44	4·41	2·51	2·63	6·13	6·74	6·10	3·58	4·248
May	6·66	8·23	12·81	12·34	5·37	12·58	12·62	6·71	13·70	10·27	10·129
June	14·85	12·32	15·78	18·87	16·42	11·90	13·95	18·10	13·30	12·79	14·828
July	28·15	19·05	16·20	22·39	19·72	23·60	31·63	22·60	25·85	11·69	22·088
August	39·05	30·10	9·39	27·48	13·51	33·07	26·06	22·50	18·60	17·02	23·678
September	20·02	22·35	13·37	16·85	18·35	15·00	18·98	17·60	25·20	19·24	18·696
October	15·59	17·00	15·61	12·04	15·14	19·03	17·71	15·05	17·40	20·20	16·477
November	5·18	11·00	9·93	4·42	10·69	15·93	14·97	9·65	10·52	14·00	10·629
December	·25	3·20	1·72	·50	...	...	4·10	1·90	...	·65	1·232
Total ...	137·84	127·66	102·20	123·64	102·26	133·99	146·17	122·12	131·97	111·07	123·892

Month.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	Average.
January	...	·18	·60	...	...	...	·05	·19	·33	...	·135
February	·77	2·20	...	1·02	...	1·22	...	1·28	1·26	·38	·813
March	5·47	2·90	2·78	2·49	4·84	1·90	·28	2·05	3·45	5·26	3·142
April	3·86	2·66	12·00	5·47	6·00	9·15	7·29	9·67	9·35	7·05	7·250
May	9·27	6·20	9·83	13·01	14·11	7·39	12·92	7·48	6·50	7·05	9·376
June	8·40	12·44	6·82	17·43	15·90	20·70	13·88	11·39	18·78	15·66	14·140
July	27·04	13·94	10·81	16·72	23·86	16·63	9·13	19·66	18·42	18·76	17·497
August	21·65	17·84	14·77	25·19	22·97	27·02	16·16	12·37	19·02	26·87	20·386
September	24·76	20·19	25·86	37·36	35·01	16·77	25·81	16·82	20·17	15·20	23·795
October	17·80	12·86	16·90	16·88	13·84	13·85	17·86	17·34	15·14	10·65	15·312
November	5·45	9·78	3·99	...	12·02	7·35	9·39	7·72	11·41	9·48	7·659
December	4·28	2·37	·65	3·50	...	1·41	3·66	·51	·75	·83	1·796
Total ...	128·75	103·56	105·01	139·07	148·55	123·39	116·43	106·48	124·58	117·19	121·301

Month.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	Average.
January	·67	·45	·10	...	·02	...	·02	·02	·10	...	·138
February	·80	1·89	...	·12	·22	1·75	...	·54	·66	...	·598
March	5·01	·86	3·48	3·90	1·12	·95	...	2·07	2·70	1·72	2·181
April	2·13	1·00	5·37	5·02	4·16	2·81	5·25	4·68	4·24	5·47	4·013
May	9·96	8·62	9·97	13·90	9·03	7·44	7·20	6·38	6·96	9·21	8·867
June	31·20	10·32	24·96	36·30	15·19	13·79	23·40	27·07	20·46	26·76	22·945
July	16·10	20·17	22·17	15·58	30·34	23·84	20·08	23·33	34·86	45·79	25·226
August	20·46	43·54	17·57	26·42	12·71	26·51	24·90	15·47	29·78	22·73	24·009
September	17·25	26·73	25·86	27·68	31·87	19·27	29·74	22·74	20·99	23·70	24·583
October	13·09	9·91	8·17	12·79	9·89	8·51	15·78	17·72	11·08	7·01	11·395
November	4·55	7·36	5·41	3·66	9·50	8·44	14·00	8·66	6·82	3·02	7·142
December	2·92	2·17	·92	2·10	·56	2·71	3·45	·06	·02	·41	1·532
Total ...	124·14	133·02	123·98	147·47	124·61	116·02	143·82	128·74	138·67	145·82	132·629

Month.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	Average.
January	...	·20	·60	...	·21	...	...	...	1·59	...	·260
February	·46	2·17	·46	·60	2·58	3·32	·36	·16	1·60	1·78	1·349
March	2·18	1·06	8·94	6·84	2·70	3·46	1·54	1·86	2·45	3·28	3·431
April	4·20	7·07	18·55	7·22	4·97	5·76	10·80	6·11	8·74	7·72	8.114
May	9·89	5·20	12·99	8·85	9·31	7·08	10·00	13·11	8·14	15·00	9·957
June	16·05	13·26	11·78	16·45	12·41	14·00	12·47	13·06	11·33	11·68	13·249
July	16·10	13·32	9·92	7·53	7·58	7·11	11·58	18·60	13·60	8·59	11·393
August	14·61	17·85	5·04	11·78	9·60	12·26	11·11	8·05	8·37	11·00	10·967
September	16·78	19·12	11·74	20·36	12·35	13·44	14·33	25·37	14·74	13·96	16·219
October	7·73	6·60	10·03	14·47	20·01	12·44	15·58	9·75	19·45	9·09	12·515
November	9·25	13·55	9·55	6·77	7·90	6·11	9·76	6·36	10·66	12·86	9·277
December	3·16	7·00	1·30	·11	·55	1·83	4·17	·76	1·70	·10	2·068
Total ...	100·41	106·40	100·90	100·98	90·17	86·81	101·70	103·19	102·37	95·06	98·799

KABALLA.

Month.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	Average.
January	...	·60	...	...	...	...	·30	...	·32	...	·122
February	·35	2·79	...	...	...	1·15	...	...	2·85	·77	·791
March	4·48	·25	5·53	1·80	1·15	·95	·50	3·00	·31	3·91	2·188
April	2·10	2·72	4·71	3·35	4·08	4·50	7·00	4·83	2·20	1·46	3·695
May	5·80	6·55	15·03	13·60	8·65	6·86	4·97	5·44	9·39	9·08	8·537
June	12·29	12·93	6·59	22·41	16·85	10·57	11·60	15·65	13·80	15·79	13·848
July	8·55	16·06	12·27	13·25	14·50	14·58	11·30	14·08	12·61	10·67	12·787
August	15·55	16·16	11·17	13·80	8·02	15·65	15·20	11·90	14·91	11·21	13·357
September	18·76	13·66	10·73	18·23	10·13	17·24	23·14	18·24	17·10	14·31	16·154
October	5·70	14·78	11·99	10·28	9·80	9·60	27·30	12·83	11·42	18·03	13·173
November	·95	10·11	4·27	5·00	4·00	5·10	9·10	10·91	7·09	5·76	6·229
December	·54	·99	3·00	2·05	...	...	1·50	1·56	...	1·08	1·072
Total ...	75·07	97·60	85·29	103·77	77·18	86·20	111·91	98·44	92·00	92·07	91·953

Month.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	Average.
January	...	...	·82	...	...	...	...	...	·11	...	·093
February	·14	·27	...	...	·08	·08	...	1·17	·84	·16	·274
March	1·90	...	1·69	6·06	...	·32	...	·27	2·47	·86	1·357
April	3·55	1·70	4·18	2·00	·84	1·44	4·52	6·25	2·25	2·38	2·911
May	2·30	8·03	8·42	7·31	4·98	7·75	4·53	8·55	7·16	6·10	6·513
June	12·96	7·85	15·30	4·60	14·94	11·76	18·42	15·21	22·20	13·59	13·683
July	38·44	17·72	21·75	24·96	44·63	15·08	42·01	31·08	31·90	24·82	29·239
August	24·80	33·95	19·80	24·64	8·73	47·77	32·53	20·74	33·66	42·38	28·900
September	15·84	24·70	17·44	19·31	23·74	19·64	29·28	20·92	27·07	23·70	22·164
October	5·60	4·08	12·20	3·73	8·06	6·85	9·33	17·90	9·85	13·40	9·100
November	2·17	8·18	3·27	3·32	2·67	9·26	7·84	5·00	5·01	6·65	5·337
December	1·58	1·38	1·03	...	...	2·40	1·79	·28	...	·17	·863
Total ...	109·28	107·86	105·90	95·93	108·67	122·35	150·25	127·37	142·52	134.21	120·434

MOYAMBA.

Month.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	Average.
January	...	1·08	·99	·06	1·85	...	·13	·08	·36	...	·455
February	·43	1·43	...	·53	...	1·09	...	·61	·11	3·32	·752
March	4·66	·75	3·27	2·19	·83	·52	·72	1·64	·72	2·61	1·791
April	1·13	4·51	4·85	4·41	2·54	3·80	3·01	2·88	3·10	4·79	3·502
May	13·44	3·90	7·32	11·09	10·46	7·33	9·39	9·58	5·39	13·35	9·125
June	15·82	9·83	14·22	9·13	15·58	9·54	10·46	12·06	25·56	13·91	13·611
July	27·31	14·85	12·28	13·32	40·55	12·81	16·79	16·29	21·26	17·80	19·326
August	17·30	26·49	12·09	18·82	11·50	30·76	19·01	20·11	20·42	24·50	20·150
September	22·37	15·73	11·39	15·61	70·28	15·57	19·35	18·58	18·09	13·19	22·016
October	14·92	13·49	9·77	13·48	16·34	11·26	11·02	15·24	15·63	13·30	13·445
November	3·68	7·21	6·71	5·21	8·73	9·38	8·26	7·99	2·97	6·99	6·713
December	4·71	1·98	·18	·73	...	·65	3·33	2·79	·42	·75	1·554
Total ...	126·27	101·25	83·07	94·58	178·66	102·71	101·47	107·85	114·03	114·51	112·440

Month.	1916.	1917.	1918.	1919.	1920.	1921.	1922.	1923.	1924.	1925.	Average.
January	...	·60	1·11	...	...	...	...	·02	·50	...	·223
February	·27	2·64	...	...	·089	2·39	...	·05	...	·62	·6059
March	1·40	1·29	9·39	3·46	3·09	2·34	·87	5·09	1·68	1·97	3·058
April	2·94	2·33	7·57	7·40	3·57	6·36	4·50	4·42	6·57	4·64	5·030
May	5·67	5·01	8·71	9·94	6·65	8·15	12·71	8·01	5·83	10·66	8·134
June	12·46	11·31	8·32	13·41	8·05	12·98	13·25	12·27	13·67	11·27	11·699
July	21·24	12·14	11·05	12·60	21·75	10·66	16·65	17·79	20·69	16·23	16·080
August	23·29	21·17	12·00	18·53	9·60	24·20	15·87	13·47	16·74	24·34	17·921
September	18·05	19·83	14·04	19·02	18·68	12·95	21·58	20·40	25·23	16·56	18·634
October	13·91	15·79	10·92	9·38	13·22	13·43	14·87	21·36	14·08	13·05	14·001
November	8·82	8·46	8·98	8·34	8·62	7·42	7·92	5·55	9·13	13·01	8·625
December	2·23	1·54	2·23	1·05	·35	2·18	2·09	1·64	2·02	·87	1·620
Total ...	110·28	102·11	94·32	103·13	93·669	103·06	110·31	110·07	116·14	113·22	105·6309

PART IV.

REPORT ON THE DIVISION OF FORESTS.

EXAMINATION OF FORESTS.

177. The usual tours of inspection were carried out in each Circle by the Assistant Conservators. The boundaries of all reserves were regularly patrolled by forest guards and no encroachments have taken place. In the Tonkoli Reserve (Northern Circle) area 180 square miles, remain thirteen villages. Ample land has been allotted to each village and boundaries demarcated so that there can be little possibility of mistake on the part of the occupants of the villages as to the limit to which they can carry their farming operations. There has been no opportunity for the examination of new areas owing to the incidence of leave and the small European staff.

CONSTITUTION OF FOREST RESERVES.

178. During the year under review the actual reservation of forests has proceeded but slowly. With the small European staff available there is a distinct set-back to progress whenever an officer goes on leave. The following reserves demarcated in 1923 and 1924 were, however, legally constituted during the year :—

Gola Forest (West) Reserve—area 24.03 square miles
Gola Forest (East) Reserve—area 88.16 square miles
Tonkoli Reserve ... 184 square miles
(Included in 1924 report) Gboi Hills ... ·79 square miles
making an addition of ... ... 296·19 square miles.

179. The list of reserves and restricted areas now constituted is as follows :—

	Reserves.	Restricted Areas.	
COLONY			
Colonial	73·39	—	
Leicester Peak	·23	—	
PROTECTORATE			
Kessewe Hills	9·01	Bumpe River	30
Kambui Hills	56·00	Ribbi „	12
Nimmini North	48·50	Yonni East	1
„ South	10·03	Yonni West	1
Dodo Hills	8·40	Kholifa Mabang	1
Gobo Hills	4·46	Sennehun West	8
Kangari Hills	33·10	Bafe and Sewa River	20
Moyamba Hills	·73		
Bojene Hills	2·85		
South Kambui	3·36		
Gboi	·79		
Gola Forest (West) ...	24·03		
Gola Forest (East) ...	88·16		
Tonkoli Reserve	184·		
Totals ...	547·04 sq. miles		73 sq. miles.

DEMARCATION.

180. The demarcation of the Gola North (proposed reserve) was continued during January and February, but further progress cannot be made until a "request" for the constitution of a forest reserve is made by the tribal authorities of the Gowra Chiefdom. This is a matter which has to be dealt with by the political officers of the province.

181. The demarcation of the proposed Tama Reserve was continued until early in March when the Assistant Conservator of Forests was recalled to Freetown to take charge of the division. About seven miles of the western boundary were cut and that portion of the Bagbe River which would mark the eastern limits of the proposed reserve was traversed. This reserve lies more or less to the east of the Tonkoli Reserve and, together, these reserves will form a useful barrier against further encroachment of grass and savannah. No demarcation was done in the eastern circle owing to shortage of staff.

Exploitation.

182. The method of regulating fellings is by minimum girth limit for each species. 141 licences to fell timber were issued in the Colonial Reserve (western circle).

183. The division supplied the Railway Department with 1,389·74 cubic feet of hardwood at a cost of £277 19s. This timber was extracted from the Kambui Reserve in the eastern circle. During the absence of the Assistant Conservator of Forests (on leave) it was not considered advisable to continue felling and conversion, and these operations were therefore suspended at the end of June and the transport of the accumulated timber to the railway line continued alone.

Buildings.

184. The usual necessary repairs to the forest guards' quarters and the forest rest-houses were carried out. The division took over the Mabang rest-house (a permanent building) from the Political Administration and this is now the headquarters of the western circle.

Plantations.

185. The boundaries of the Kangari Hills Reserve (except those portions which run through high forest) have been sown with the Henoi and Kawei varieties of oil-palm at intervals of 12 feet. Three small nursery beds have been sown with the Henoi variety of oil-palm; these are intended for planting up the boundaries of the Tonkoli Reserve.

186. A small plantation of Gorli (*Oncoba echinata*) was made at Kennema in the eastern circle, which is doing well. No other plantation work was undertaken during the year.

Clerical Establishment.

187. There is no clerical staff attached to the Division of Forests and the European forest officers have to spend much of their valuable time in typewriting and handwriting letters, returns, and in the keeping of record books, preparation of vouchers, etc.

GENERAL.

188. The Conservator of Forests was appointed Exhibition Commissioner for Sierra Leone. at the British Empire Exhibition at Wembley and was absent from the Colony for ten months. During this time only protection work was carried out in the western circle, which was administered from Headquarters.

189. Assistant Conservator Mr. Macdonald proceeded on leave on 4th March and the southern circle was closed down, except for protection work, from the end of February until 31st December. The circle was administered by the Assistant Conservator of Forests in charge of the eastern circle until 23rd July and afterwards from Headquarters. Mr. Macdonald did duty at the British Empire Exhibition at Wembley as Assistant Commissioner for two months and nine days.

190. Assistant Conservator Mr. D. G. Thomas was away from the northern circle from 8th July to 31st December, during which time only protection work was done and the circle was administered from Headquarters.

191. Assistant Conservator Mr. Burns was absent from his circle from 23rd July until the end of the year and no work, except protection work and the transport of converted timber, was done during the period.

192. It will be seen that the four European forest officers together put in twenty-one months residential service during 1925.

Conclusion.

193. The division is much indebted to and keenly appreciates the valuable assistance rendered to it by members of the administrative service during the year under review.

I have the honour to be,

Sir,

Your obedient servant,

KENNETH BURBRIDGE,

Conservator of Forests.

PART V.

REPORT ON THE DIVISION OF INSPECTION.

I—STAFF.

194. The Inspector of Plants and Produce, Mr. G. Tuach, was absent from the Colony on leave from the 13th May to the 23rd October. During that period the work of the inspection staff was supervised by the Honourable the Commissioner of Lands and Forests. Sub-Inspectors of Produce—Messrs. S. T. Maddy and B. Fabundeh were granted one month leave in November. Mr. Lassi Inga was on duty throughout the year.

II—TOURS OF INSPECTION.

195. During January and February the Inspector made a tour of inspection in the Southern Province and reported favourably on the quality of the produce. An improvement in trade, especially in the Mano River District, was also reported.

In November he toured in the Central Province along the railway—from Moyamba to Pendembu—and obtained convictions against three traders for being in possession of adulterated produce.

III—ACTIVITIES OF SUB-INSPECTORS.

196. Sub-Inspector Maddy was responsible for the inspection of produce in the Freetown area throughout the year. His duties principally consisted of examining produce arriving by boat and periodical visits of stores and export sheds. He obtained eight convictions for offences against the Produce Regulations with fines amounting to £12 17*s.* 6*d.*

197. Sub-Inspector Inga was responsible for the inspection of produce in the Southern Province with headquarters at Bonthe, the second port in the Colony. His duties consisted of tours of inspection through the various trade centres of the province and periodical inspection of produce in the stores of merchants at Bonthe and York Island. He reported twenty-five persons for offences against the Regulations, twenty-two of whom were convicted.

198. Sub-Inspector Fabundeh was responsible for the inspection of produce in the Northern and Central Provinces. He toured in each province alternately and obtained twenty-eight convictions for offences against the Regulations. I regret to have to report that during the latter part of the year this officer's conduct was found to have been most unsatisfactory and he was in consequence dismissed from the Service.

199. The following is a return of convictions and fines imposed during the year under the Native Produce Regulations :—

Number of persons reported	68
Number convicted	60
Number discharged	2
Number not dealt with at the end of the year ...	6
Total amount of fines	£191 7*s.* 6*d.*

Weights and Measures.

200. The Inspector of Plants and Produce and the Sub-Inspectors of Produce were appointed Deputy Inspectors of Weights and Measures for the Protectorate as from the 1st January, 1925. The necessary standard weights had not been supplied before the end of the year, consequently no testing or stamping of scales was done. There were, however, nineteen convictions obtained against traders for using illegal bushel measures, and fines amounting to £51 were inflicted.

IV—REVENUE AND EXPENDITURE.

201. The following is a statement showing the revenue and expenditure during the year :—

(*a*) Revenue.

	£	*s.*	*d.*
Produce licences	1,418	19	4
Fines	243	7	6
Total	1,662	6	10

(*b*) Expenditure.

	£	*s.*	*d.*
Personal Emoluments	620	0	0
Other Charges	304	12	6
Total	924	12	6

There was an increase of £272 4*s.* 6*d.* in the revenue obtained from produce licences in 1925 as compared with 1924. There was also an increase of £136 5*s.* in the amount received in fines, which includes fines under the Weights and Measures Ordinance, making a total increase over 1924 of £408 9*s.* 6*d.*

V—PRODUCE INSPECTION.

202. Palm kernels are still the only product which comes under inspection, and throughout the year every effort was made to maintain a good standard of quality. Trade in palm kernels was particularly brisk, and competition most keen—so keen in fact that merchants and traders alike became less careful in their examination of produce before purchasing, with the result that a greater number of persons were reported for contravention of the Ordinance than in the previous year. Withal, however, the produce exported maintained a good standard of quality. With the exception of a few shipments from Sherbro, the reports on the quality of Sierra Leone kernels were most satisfactory. The reports on the Sherbro shipments were to the effect that they contained a low percentage of oil. This I consider was due to the fact that the kernels had been too long in store before being exported, owing to the lack of transport facilities during the dry season. As is well known, the rivers are not navigable beyond certain points in the dry season and, consequently, as the principal buying centres are beyond these points, the produce bought in the dry season has to be stored until the rivers open up in the rains. It is not unusual either for the rivers to close again before all the produce has been cleared. It is therefore not unlikely that some of the produce had been in store for over twelve months before being exported.

Legislation.

203. The regulations governing produce were amended during the year and several new bills in connexion with the inspection and standardization of produce were passed, which will come into operation in 1926. In addition to palm kernels, these bills bring under inspection, ginger, palm oil and piassava, and also tighten up the regulations in connexion with palm kernels. They also provide legislation regarding the transport of water-borne kernels to prevent as far as possible the kernels being damaged by water.

VI—EXPORT OF PALM KERNELS.

204. As already stated, the trade in palm kernels was particularly brisk throughout the year, with the result that the exports for 1925 exceeded those of 1924 by 2,114 tons, thus creating a new record. The prices throughout the year maintained the high level reached in 1924 of £18 per ton.

205. The following figures show the total exports of palm kernels from Freetown and Sherbro during the year :—

Freetown.		Sherbro.		Total.
Weight. Tons.	Value. £	Weight. Tons.	Value. £	Tons.
46,046	972,636	17,185	179,831	63,231

The exports for the preceding five years were as follows :—

1920, Tons	1921, Tons	1922, Tons	1923, Tons	1924, Tons
50,425	40,409	49,029	59,545	61,117

Ginger.

206. It had been the intention of Government to legislate for the standardization and grading of ginger, but as the representatives of the trade in the Colony were not in favour of this, nor would they offer a higher price for well prepared ginger over the ordinary rough scraped qualtiy, the matter was left in abeyance during 1925. The result of this was that the ginger did not come up to the standard attained in 1924.

The season, however, was a good one from the producer's point of view, as the prices paid throughout the season averaged *5d.* per lb. which is remarkably good for roughly scraped ginger. Unfortunately for the purchasers, however, there was no demand for more than about three-fifths of the quantity exported, and at the opening of the 1925–1926 season the remaining two-fifths were still unsold.

207. The exports of ginger for the year greatly exceeded any previous year, as will be seen from the following return :—

	Weight. Cwts.	Value. £
1923	27,718	45,974
1924	38,847	105,633
1925	48,848	119,002

It is obvious from the foregoing that there is only a very limited market for unpeeled ginger, and it would be safe to state that had the ginger been properly peeled and cured there would have been a much greater demand. Efforts are to be made in the 1925–1926 season, which is now on, to obtain 100 tons of peeled ginger to test the market, so as to prove beyond doubt which quality would have the greater demand.

Palm Oil.

208. The quality of the palm oil shipped from Freetown during the year was greatly superior to that of 1924. No reports of adulteration were received.

The price, however, was not so favourable, 7*s.* per tin of four gallons being the highest price offered, whereas in 1924 the average price was about 9*s.* per tin.

Piassava.

209. This produce has for several years held a poor position on the market. A fairly steady trade, however, is being carried on at Sulima and Mano Salija at from £10 to £13 per ton. The exports for the year being 2,029 tons valued £27,950. Exhaustive experiments were carried out during the year by the Division of Research in connexion with piassava, and it is hoped that in due course it will be possible to re-establish interest in the Sierra Leone product.

I have the honour to be,

Sir,

Your most obedient servant,

GEO. TUACH,

Inspector of Plants and Produce.